

FLIGHT

The
AIRCRAFT ENGINEER
AND AIRSHIPS

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CONTENTS

	PAGE
Editorial Comment:	
Chairman of the Royal Aero Club	387
Italy and the Air Arm	387
Scott Succeeds	389
Germany-Chicago in a Seaplane	390
Deutsch de la Meurthe Cup	390
National Aviation Day	391
Royal Aero Club Official Notices	392
Private Flying and Gliding	393
Airport News	395
Airport Development: by N. Norman	396
Air Transport	401
Airisms from the Four Winds	403
The Industry	404
A.I.D. Dinner	406
Royal Air Force	407
Models	408

EDITORIAL COMMENT



MUCH water has flowed under the bridges since Lord Gorell was Under-Secretary of State for Air in the Coalition Government. If we remember right, the Air Minister then was Capt. F. E. Guest. It was a time when it was hardly possible for any chiefs of the Air Ministry to do much for the Department. The Air Minister was then not even a member of the Cabinet. Aeroplanes had not proved themselves to be much use in peace, and because of that lack of proof the Government would give them no assistance. Because of that lack of assistance, no great improvement in aircraft was possible; and so a vicious circle was established. This circle was broken in 1922 when the King presented his Cup for an air race, and public enthusiasm in the subject of aircraft awoke once more. Consequently Lord Gorell is not so much remembered as an Under-Secretary for Air as, first, the son of his famous father, the great judge of the Divorce Court, secondly as a poet and novelist, and thirdly as a Liberal peer who joined the Labour party. Now the Royal Aero Club has elected him at its chairman, doubtless in virtue of his one-time connection with the Air Ministry. We trust that this will mean a renewal of his lordship's interest in the air. He is a man of undoubted and varied ability, and his services in an active capacity such as is implied by his new appointment cannot but be of considerable service to the cause of aircraft and flying.

Signor Grandi, the Italian delegate at the Disarmament Conference, put forward the most sweeping proposals of all for the abolition of offensive armaments. All bombing aircraft were to be abolished, among other measures. The proposals, in fact, were so sweeping that it was difficult to take them seriously and to believe that Italy really hoped that the Conference would adopt them. For one thing, Fascist Italy, while inspired by an idealism which we heartily admire, is usually intensely practical

DIARY OF CURRENT AND FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in this list:—

1932

- May 6. Comrades of the R.A.F. (Hounslow Branch) Carnival Dance at Osterley Hotel.
- May 6-13. National Aviation Day Displays, see p. 390.
- May 7. Antwerp Aviation Club Air Display and Garden Party.
- May 14. Coventry Ae.C. Air Pageant.
- May 14-15. Skegness Air Pageant.
- May 16. Northamptonshire Ae.C. Annual Pageant.
- May 16. Hertfordshire F.C. Air Display at Wheathampstead.
- May 16. Shanklin Flying Display.
- May 16. Southend F.C. Air Display.
- May 16. Air Display at Wallingford Aerodrome.
- May 18. Household Brigade Flying Club Meeting, Heston.
- May 21. "Morning Post" Cross-Country Air Race, Heston.
- May 21-23. Scottish Flying Club Display, Moorpark, Renfrew.
- May 22-30. Conference of Transoceanic Aviators at Rome.
- May 25. Opening of Royal Tournament, Olympia.
- May 26. "New Methods of Research in Aeronautics," Wilbur Wright Memorial Lecture, by H. E. Wimperis, before R.Ae.S.
- May 28. London-Newcastle Air Race for "Newcastle Evening World" Trophy.
- May 27-28. Brooklands Meeting.
- May 31. R.A.F. (Middle East) Dinner at R.A.F. Club.
- June 4. Bristol Airport Summer Flying Meeting.
- June 4. Leicester Ae.C. Flying Display and Motor Gymkhana at Ratcliffe Aerodrome.
- June 5. Reading Ae.C. At Home, Woodley Aerodrome.
- June 7. Junior Ae.C. Dinner at Ham Bone Club, W.
- June 11. Close of Royal Tournament, Olympia.
- June 12. Herts and Essex Ae.C. Meeting at Broxbourne.
- June 12. Ae.C. of Germany Air Pageant at Tempelhof.
- June 17-18. Night Flying Display at Ratcliffe Aerodrome.
- June 18. Hull Air Display.
- June 21. Aero Golfing Society: "Flight" Challenge Cup. Bramshott G.C.
- June 21-28. Blackpool Air Pageant, Stanley Park.
- June 25. R.A.F. Display, Hendon.
- June 25-26. International Tourist Rally, Boulogne.
- July 8-9. King's Cup Air Race, start and finish Brooklands.
- Nov. 25-Dec. 11. Paris Aero Show.

when it comes to turning those views into action. Practical idealism of this description is, to our way of thinking, a far more useful contribution to the welfare of a country and of the comity of nations, than is an absolute idealism which takes no account of what is practical politics. Such an absolute idealism may, for example, persuade the League of Nations simply to forbid war. The aspiration may be noble, but the prohibition would not be worth the paper on which it might be written. To forbid all bombing aircraft is another prohibition similar in kind but different in degree. Whether bombers were prohibited in peace time or not, there can be no doubt that they would be used as soon as war broke out. The makeshift bombers which would be employed at first would not be very good at their work. The unpractised bomb-aimers would miss their targets more often than not, and instead of blowing up a munition factory would often hit residential houses in the neighbourhood, with consequent deplorable loss of civilian life. Before very long the aircraft firms would produce bombers which had been designed for the purpose, and practice would soon improve the skill of the bomb-aimers. That process was gone through in the late war, and it would be repeated in the next. The fact is that so long as there is war, so long will the bomber be a legitimate weapon for destroying *matériel* which the artillery would destroy if it could reach it. Certain weapons are inherently legitimate, whatever any conference may say, and to forbid their use is merely to bring the conference itself into disrepute with the belligerents.

What is a practicable and very desirable reform is to forbid the use of bombers for attacking areas which are nothing but residential areas, and at the same time to forbid the use of gas and all missiles which only attain their maximum effect when used against civil personnel. The use of gas, in fact, should be forbidden in all cases. It is a barbarous and cruel weapon, and barbarities should not be practised on combatants any more than on civilians. Had Signor Grandi proposed the limitation of the kind of bombs to be dropped and of the targets on which they might be dropped, we should have felt more certain that Italy was genuinely interested in sparing mankind an aggravation of the horrors to which it was subjected in the great war.

As a contrast to the proposals of Signor Grandi, we now get the report of a speech by General Balbo, the Air Minister, speaking in the Italian Chamber on the Air Estimates. Certainly the Estimates are modest in comparison with some others. They total 754 million lire (about 11 million pounds), as compared with the French Estimates of 3,252 million francs (about 36 million pounds). Comparisons, said General Balbo, are odious, but they are sometimes indispensable.

The Air Minister, who is generally regarded as the right-hand man of Signor Mussolini and his designated successor in the event of the Prime Minister's death, went on to speak of the functions of the air arm in war. He took as his text the recent Italian air manoeuvres when 400 aeroplanes might have been in a position to destroy Milan, and gave it as his opinion that in a future war the air force would play a decisive part. He continued (according to *The Times* correspondent): "When we say that it falls to us airmen to break up at the outset the offensive powers of the enemy, we are conscious

that our task is the gravest of all. It is not our fault if destruction from the sky appears the unavoidable feature of future wars." These views by the Air Minister do not seem to agree well with the proposals put before the Disarmament Conference by Signor Grandi, the Foreign Minister. It almost sounds as if there is an agreement to differ in the Italian Cabinet not unlike the state of affairs in our own. If Italy relies on her air force to break up an enemy offensive at the outset, then surely that air force is her chief defensive arm. For Italy to propose the abolition of all bomber aircraft seems, accordingly, an act almost of suicide—if she had any expectations that the proposals would be accepted.

In General Balbo's point of view there is part of which we approve and part which we deprecate. He makes the point that aircraft, and in that context he must have meant bomber aircraft, are a defensive weapon, and with that we are much inclined to agree, provided that the use of gas bombs is forbidden. As we said in a recent leading article, there is nothing so offensive as a munition factory, and the bombers which destroy it are certainly making their own country more secure. We are aware that this line of argument can be extended to cover other weapons which several representatives at the Disarmament Conference are inclined to accept as offensive and not as defensive in character. We may take the example of the great war, when the Germans invaded parts of France and Belgium and dug themselves in. The Allies were forced into the tactical position of attackers, and if they had been deprived of all weapons stigmatised at Geneva as "offensive," they might never have been able to drive the invaders back across the frontier. In fact, it is very difficult to lay down a hard and fast distinction between what is offensive and what defensive. Bomber aircraft, in our opinion, whether Geneva calls them by one name or the other, will continue to be used in any future war, and quite rightly so. The only reasonable limitation of their activities concerns the type of bomb which they drop and the spheres where they select their targets.

General Balbo entered a sort of apologia for wreaking destruction from the skies. We regret this part of his speech. If he meant merely the destruction of military targets in any enemy zone, there was no need for any apologia. Of course, bombs may accidentally kill some civilians, and so may shell fire from the guns, but neither case constitutes a criminal and deliberate attack on civilians. If such an attack is indulged in, then no apologia can excuse it. There again there may be what are called border cases. Factories may be situated in very populous areas, but in that case the people who placed them there must bear the responsibility for the consequences. In the late war it happened much too often that airmen who had got over a town but could see no military objective with any certainty decided to "chance it" and released their bombs. That appears to us a grossly criminal case, and airmen taken prisoners after such an act (if it could be proved) ought not to be entitled to the privileges of prisoners of war. We very much hope that General Balbo, a gallant gentleman for whom we have a great admiration, did not intend that his words should be taken as an excuse for actions of that description. In war, honourable fighting, we repeat, needs no excuse, but "frightfulness" is at all times excusable.

Scott Succeeds!

Butler's Time for England—Australia Flight Reduced by 5 Hours 42 Minutes

WE are able, as foreshadowed last week, to conclude our report on C. W. A. Scott's flight from England to Australia with the statement that he has succeeded in achieving his object—to better Butler's time for the flight of 9 days 2 hr. 29 min. and so regain the "record" previously held by him.

Scott accomplished the journey, nearly 10,000 miles, in 8 days 20 hr. 47 min., and thus bettered Butler's time by 5 hr. 42 min. His time for the flight has varied in many of the reports received, and the above figures have been based on the following:—He left Lympne at 5.5 a.m. (B.S.T.), April 19, and reached Darwin at 10.22 a.m. (local time, or allowing for the zone time for Darwin of 9½ hr. difference, 1.52 a.m. B.S.T.), April 28.

Actually, when Scott arrived at Koepang at 5.10 p.m. (local time) he was about 18 hr. ahead of Butler, but, feeling extremely fatigued and not wishing to risk a night landing under such conditions, he decided to wait and rest for a bit at Koepang, allowing himself plenty of time still to beat the record. Incidentally, also, he might have improved upon the time even more so had he been able to keep to his schedule as originally planned, but in spite of a record hop of over 1,100 miles to Brindisi at the commencement of his flight, subsequent head winds and sand storms delayed his progress up to Basra.

After this, however, he made good going, especially in a splendid non-stop flight across India from Karachi to Calcutta—as may be seen from the accompanying log. As regards the latter, we would point out that the distances given are only approximate, and are, if anything, under-estimated, for no allowances have been made for detours, etc.

In his final stage across the Timor Sea he had, in his own words, a gruelling time, meeting with terrific head winds which blew him off his course. He endeavoured to ascertain his whereabouts when he sighted a lugger, and circled low over the boat—but apparently they thought he was stunting. However, he made landfall 100 miles west



ENDURANCE ! Mr. C. W. A. Scott, who flew from England to Australia in 8 days 20 hr. 47 min. in his "Gipsy Moth." (FLIGHT Photo.)

of Port Darwin, and after several attempts to locate Darwin he made a successful landing at the Litchfield Aerodrome where an enthusiastic crowd gave him a hearty welcome.

Scott made his first flight to Australia in April last year, when he made the trip in 9 days 4 hr. 11 min., beating Kingsford Smith's previous record of 9 days 21 hr. 40 min. He then accomplished the homeward journey, in May-June of the same year, in 10 days 23 hr., but this was bettered almost immediately by J. A. Mollison (also on a "Gipsy Moth") with 8 days 19 hr. 25 min.—which still remains unbeaten. Last October-November C. A. Butler, in a Comper "Swift," beat Scott's outward flight with 9 days 2 hr. 29 min., and now Scott has regained the honours.

In all his three Australian flights Scott has used the same D.H. "Moth" with 120-h.p. "Gipsy II" engine, which has thus stood up to its 30,000 miles remarkably well. Scott has sent the following cable to the de Havilland Aircraft Co., Ltd.:—"Gipsy engine and aeroplane magnificent engine never faltered though treated very hardy. Many thanks and regards."

The "Gipsy" engine was fitted with B.T.H. AG.4 magnetos, K.L.G. plugs, Hoffmann bearings, and a Fairey metal airscrew. Shell spirit and Wakefield "Castrol" oil were used on this flight.

ENGLAND—AUSTRALIA FLIGHTS COMPARED

	SCOTT	BUTLER
1st day	Brindisi (1,100).	Naples (950).
2nd day	Aleppo (1,000).	Athens (550).
3rd day	Basra (750).	Baghdad (1,200).
4th day	Karachi (1,230).	Jask (960).
5th day	Calcutta (1,350).	Jhansi (1,270).
6th day	Rangoon (640).	Akyab (970).
7th day	Singapore 1,000).	Victoria Pt. (800).
8th day	Sourabaya (1,000).	Batavia (1,270).
9th day	Koepang (800).	Koepang (1,260).
10th day	Darwin (530).	Darwin (530).

New London-Cape Air Route Motor Expedition

An expedition, journeying either via Tripoli and Lake Chad, or Algeria and the Sahara Desert and Nigeria, Angola and South West Africa to Capetown, will leave London in June next, with the object of serving to bring about the early use of the direct air route between Europe and South Africa by commercial aviation, and thereby reduce the time taken for the journey from 11 days, the time taken via Egypt and East Africa, to a probable four days. The expedition will use a 2-ton six-wheel commercial motor vehicle, with a specially constructed body, and this, as well as every other major item of equipment, will be of British manufacture; it has the support of, or is being co-operated with and generally assisted by, numerous public bodies concerned with and interested in the expedition's object. Many manufacturers are also either furnishing the expedition with their products free of cost, or

allowing it very substantial rebates on the normal price. Little need be said of the immense benefits to be derived from linking up Europe, and particularly Great Britain, with South Africa by the shortest, quickest and best air route. Suffice to say that commerce and industry will be promoted, friendship strengthened, and understanding made easier. It is being more and more appreciated that inter-Empire trade is the key to the return to prosperity. The expedition will perform the essential preliminary requirement of demonstrating the practicability and safety of the route on the ground at all times of the year, as it has recently been so well done in the air. An appeal is being made to all interested to support the fund which is being raised to defray almost the whole of the expedition's expenses; approximately £1,500. All payments should be made to the Standard Bank of South Africa, 9, Northumberland Avenue, London, W.C.2.

GERMANY TO CHICAGO BY FLYING BOAT

ON April 28 Capt. von Gronau told the Royal Aeronautical Society something of his flight, last year, from Germany to Chicago via Faroe Islands, Iceland, Greenland and Labrador, in a Dornier "Wal" flying boat. Col. the Master of Sempill, who was in the chair, mentioned in introducing the lecturer that Capt. von Gronau had come over specially from Warnemünde to give his lecture and show his lantern slides and film. Capt. von Gronau entered the German Navy 21 years ago, and after some years transferred to the Naval air service. He was now director of the *Verkehrs Fliegerschule*. Col. Sempill recalled that it was in 1929 that Capt. von Gronau conceived the idea of making a flight to America via the northern route, and made a trial flight as far as Iceland and back. In 1930 he made the flight to America, via Iceland and the southernmost point of Greenland, and finally last year he made yet another flight over the same route, but this time he flew across Greenland from east to west in order to avoid the fogs usually found along the southern portion of the east coast of Greenland.

Capt. von Gronau then read his paper, which was interspersed with lantern slides. Generally speaking, the flight was without serious incident, although luck seems to have been with the crew of the "Wal" on more than one occasion. Two 700-h.p. B.M.W. engines had been fitted in the machine in place of the Rolls-Royce "Eagles," and on a flight along the Greenland coast one of the engines began to steam and smoke. On alighting it was found that two pistons had seized in their cylinders, but fortunately two spares had been brought along and were fitted, although great care had to be taken not to drop a single bolt, nut or split pin, as it would probably have fallen overboard and prevented repairs being effected.

Of navigational difficulties there were not a few, due mainly to the proximity to the magnetic north pole, and difficulties were experienced on more than one occasion with finding petrol dumps. In some of the more outlying districts of Greenland the language problem was a very real one, the crew vainly trying German, English, Danish, and the "international sailors' language."

However, one way or another the difficulties were overcome, and the flight across Greenland from Scoresby Sound to Godthaab was safely accomplished. From there the flight went via Hudson Strait, Hudson Bay, and Lake Michigan to Chicago. Three sets of maps were carried,

and each differed from the other, and all differed from reality.

Capt. von Gronau then showed a film he had taken during the flight. The fact that the full-size film was not printed on non-inflammable celluloid prevented that from being projected, and a small (16-mm.) film had to be shown instead. One imagines that Capt. von Gronau had a camera in which the view finder was placed some distance above the lens, for in many of the "shots" a foreground in the form of a portion of the aircraft blotted out most of the picture. For all that the film was very interesting and showed that, during a couple of summer months at least, Greenland is not as desolate and cheerless as might be imagined. For the rest of the year, however, it is probably a very different story, and any air service which might be attempted would have to deal not only with extensive fog flying, but presumably also with quite a good deal of night flying. Often, one imagines, the aircraft would be compelled to fly through fog in the dark, which does not sound alluring.

A number of people made remarks after the showing of the film; of a discussion, one can scarcely speak. But two points emerged which had any serious bearing on the chances of a northern air route from Europe to America: Col. Sheldermine thought that, after seeing the film (which was taken during August, he it remembered), one was left without very great confidence in the feasibility of the route, while Mr. Watkins, of the British Arctic Expedition, thought that with proper bases established, the route would be practicable.

In reply to certain questions asked, Capt. von Gronau said that he carried small compasses and big compasses, light compasses and heavy compasses, an earth inductor compass and many magnetic compasses. He also had a sun compass, but owing to its great air drag it was not used. Most of the navigation was done by wireless direction finding, and magnetic variation was checked by the sun. The ice formation on the wings would probably be likely to occur during six months of the year, but he thought the route possible, although the southern one, via Cape Farewell, would probably be the better if proper bases were established.

After the lecture Capt. von Gronau was entertained at a dinner given by the Society at the Hyde Park Hotel, Maj. T. M. Barlow, chief engineer of the Fairey Company, being in the chair in the absence of Mr. C. R. Fairey.

THE DEUTSCH DE LA MEURTHER CUP

THE Aero Club of France has just announced a new International Challenge Trophy, to be known as the Deutsch de la Meurthe Cup. It will be open for international speed competitions for land and sea planes (and amphibians) over a course of at least 2,000 kilometres (1,242.8 miles). This distance will be divided into two flights of 1,000 kilometres (621.4 miles) each, and a landing of not more than 90 minutes between them will be allowed.

The entries will be limited to single-seater planes, representing recognised clubs, whose engine or engines have a cylinder capacity not to exceed 8 litres (1 gallon 6.08 pints). No change of pilots will be allowed. They must remain the same throughout the Contest. Any kind of fuel can be used. Repairs and refuelling are permitted.

The start of all the participating planes will be made simultaneously, the machines being stationary on the starting line with their engines turning.

Each of the participants will be required to prove, at least 15 days before the date set for the Contest, that he has flown at the rate of 200 km./hr. (124.3 m.p.h.), or better, over a closed circuit course of 100 km. (62.14 miles). The fuel tanks of his plane must be full at the start of this trial flight.

The entrance fee is fixed at 2,000 francs (£20 approxi-

mately) per plane, 1,000 francs of which will be refunded to planes starting in the race. This Challenge Cup has a value of 20,000 francs (£200 approximately), and a sum of 100,000 francs (£1,000 approximately) in cash will be awarded the winner in addition.

The Club which the winning pilot represents will hold the Cup until the succeeding Contest. These Contests must be held once in at least every two years. The Cup will become the property of the club which wins it three times, not necessarily consecutively.

The foregoing is a general outline of the regulations as so far announced. The rules are now being printed and will shortly be made public.

It is learned unofficially that the first Contest will be held in 1933, probably in the district adjoining Paris, known as "la Bauce." This is a large open section of country lying to the south-east of the French capital, in the direction of Orleans. For this first Contest the entries will necessarily be limited to land planes or amphibians, and the courses will be laid out over closed circuits bounded by distances of 100 to 200 km. (62.14 to 124.3 miles) each.

Entries will be received by the Aero Club of France from May 1 to July 18 next, after which there may be a penalty attached.

R. C. W.

National Aviation Day

Next week displays will be held at: May 7 and 8, Gloucester, Parton Farm, Cheltenham Road; May 9, Walsall, Calderfield Farm, Mellish Road; May 10, Melton Mowbray, Chestnut Farm, Fortytwo Acre, Sandy Lane;

May 11, Derby, The Flying Ground, Stenson Road; May 12, Nottingham, Tollerton Aerodrome; May 13, Mansfield, Rushley Farm, Derby Road; May 14, Rugby, Lawford Heath; May 15 and 16, Enfield, The Old Polo Field, Bramleys Farm, Cockfosters Road.

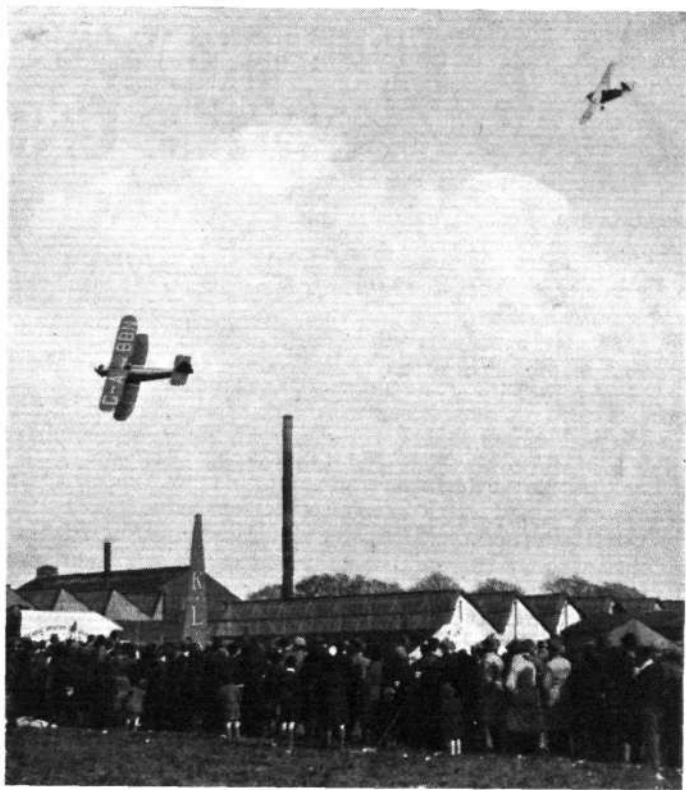
National Aviation Day

LAST week-end the Cobham Air Circus visited Stag Lane Aerodrome, and as the sort of show which will be given at each of the towns and places to be visited by the "Circus" is the same, one got a very good idea of what Great Britain will see during the next few months. And let it be said at once, Sir Alan Cobham's National Aviation Day display will do a tremendous amount of good in getting people all over the country to talk aviation, think aviation and practise aviation. Sir Alan has the faculty of knowing what the man in the street appreciates, and without making his show vulgar he manages to incorporate enough spectacular turns to please John Citizen and Jane, his wife, while not forgetting the educational side, neatly and unobtrusively introduced by "items" and *via* the loud-speaker system. While the spectator is still filled with wonder at the clever handling of the machines in an exhibition of aerobatics, he sees the big Handley Page W.10 taking off with a full load of passengers, and is reminded, probably by Sir Alan himself, that larger and newer machines are doing this all day and every day at Croydon, with as little fuss as a train leaving Victoria Station, and with as great punctuality.

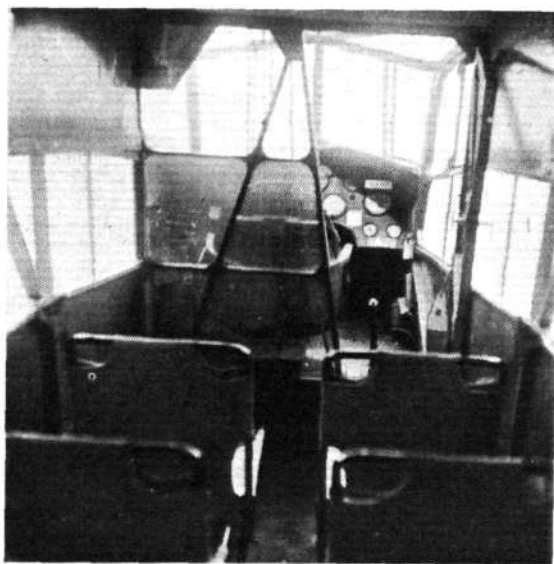
Just as John and Jane have ceased gasping at the daring of the parachutist, they are reminded that this is not a spectacular stunt, but a lifeboat of the air when, very infrequently, trouble arises.

If the majority of spectators consider £1 too dear for a flight of 50-60 miles in the Handley Page W.10, or the Airspeed "Ferry," it is pointed out that all the sensation of flying, but without the noise and draught, can be enjoyed by going up with Mr. Lowe Wylde in his auto-towed glider for the modest sum of five shillings. The adventurously-inclined can sample for themselves the thrills of aerobatics by going up in any of the two-seaters, and if any there be who value safety first, they can sit still in the air in the "Autogiro" and realise that in this type of aircraft the pilot has ample time to make a decision and does not have to think in terms of split seconds.

The linking of wireless (familiar to everyone) and flying is demonstrated repeatedly by the Standard and Kolster Brandes radio and loud-speaker equipment, and a few lucky ones will themselves be able to give orders



AERODROME RACING: Realising the fascination of watching aeroplanes racing around a course on the aerodrome, Sir Alan Cobham has included this item in his programme. Here are seen a Southern "Martlet" and a Comper "Swift" fighting for first place. (FLIGHT Photo.)



THE LATEST PASSENGER-CARRIER: The cabin of the Airspeed "Ferry" has seats for 10 passengers, who all get an excellent view. (FLIGHT Photo.)

to "evolving" pilots over the microphone. Altogether the Cobham Circus is going to introduce flying to the general public in a manner which should benefit British aviation very materially. Our advice to readers of FLIGHT is: "Do not miss seeing Cobham's Circus when he is in your locality."

The aircraft types which will be seen at the National Aviation Day Displays include the following:—Handley Page W.10 (two Napier "Lions"), Airspeed "Ferry" (three "Gipsies"), "Gipsy-Moth" ("Gipsy"), "Martlet" ("Genet"), Comper "Swift" ("Pobjoy"), Blackburn "Bluebird" ("Cirrus"), de Havilland "Tiger Moth" ("Gipsy III"), "Desoutter three-seater monoplane" ("Hermes"), "Autogiro" C.19, Mark IV ("Genet Major"), and the good old Avro 504.

WIRELESS CONTROL: The Comper "Swift" has been fitted with a Standard receiving set so that the pilot (Flt. Lt. Turner Hughes) can be given, from the ground transmitting station, directions as to which aerobatics manoeuvre to carry out next. (FLIGHT Photo.)



THE ROYAL AERO CLUB OF THE UNITED KINGDOM

OFFICIAL NOTICES TO MEMBERS

REPORT of the Meeting of the Committee of the Royal Aero Club, held at 119, Piccadilly, London, W.1, on Wednesday, April 27, 1932.

Present.—Lord Gorell, C.B.E., M.C., in the Chair; Lt. Col. M. O. Darby, O.B.E., Maj. C. J. W. Darwin, D.S.O., Maj. A. Goodfellow, F. Handley Page, C.B.E., W. Lindsay Everard, M.P., Col. F. Lindsay Lloyd, C.M.G., C.B.E., John Lord, Lt. Col. J. T. C. Moore-Brabazon, M.C., M.P., Lt. Col. Sir Francis K. McClean, A.F.C., Lt. Col. M. O'Gorman, C.B., Maj. H. A. Petre, D.S.O., M.C., Capt. C. B. Wilson, M.C. In attendance, H. E. Perrin, Secretary; B. Stevenson, House Secretary.

Election of Chairman and Vice-Chairman.—Lord Gorell was unanimously elected Chairman of the Club for the year 1932; Lt. Col. M. O'Gorman was unanimously elected Vice-Chairman of the Club for the year 1932.

Stewards of the Club.—The following Stewards of the Club were elected for the year 1932: Brig. Gen. the Duke of Atholl, K.T., G.C.V.O., C.B., D.S.O., the Rt. Hon. Lord Hugh Cecil, M.P., Lord Cozens Hardy, Brig. Gen. Sir Capel Holden, K.C.B., F.R.S., Lt. Col. J. T. C. Moore-Brabazon, M.C., M.P., Col. Sir Joseph Reed.

Election of Members.—The following Members were elected: John Hastings Bartlett, P/O. Neill Daunt, Henry Guy Rivers Malet, Charles Osenton, Flt. Lt. Stuart Douglas Scott, Robert William Anderson, Richard Milroy Clarkson, Eric Douglas Cummings, John Lucien Keith, Alexander Fraser Nalder, Harold Charles Pemberton, Lt. Com. Geoffrey Tremayne Rodd, R.N., Joseph Meyler Symmons, Flt. Lt. Humphrey Montagu Whittle, Lt. Col. Warwick Wright, D.S.O.

Sub-Committees.—The following Sub-Committees were appointed:—

Racing.—Lt. Col. W. A. Bristow, Lt. Col. M. O. Darby, O.B.E., W. Lindsay Everard, M.P., Col. F. Lindsay Lloyd, C.M.G., C.B.E., Maj. R. H. Mayo, O.B.E., Wing Com. H. M. Probyn, D.S.O.

Representatives of General Council.—Flt. Lt. D. W. F. Bonham-Carter, Maj. A. Goodfellow, R. Ashley Hall.

Technical.—Maj. T. M. Barlow, Maj. J. S. Buchanan, O.B.E., R. S. Capon, Sqd. Ldr. T. H. England, D.S.O., W. O. Manning, Maj. R. H. Mayo, O.B.E., Lt. Col. H. W. S. Outram, C.B.E., Sqd. Ldr. M. E. A. Wright, A.F.C.

Parliamentary.—Capt. H. H. Balfour, M.P., Lt. Col. J. T. C. Moore-Brabazon, M.C., M.P., Lt. Col. A. Hamilton Gault, D.S.O., M.P., W. Lindsay Everard, M.P., Maj. K. M. Beaumont, D.S.O., Capt. H. S. Broad, Maj. A. Goodfellow, Maj. H. A. Petre, D.S.O., M.C.

Touring.—Maj. K. M. Beaumont, D.S.O., Capt. H. S. Broad, Maj. C. J. W. Darwin, D.S.O., W. Lindsay Everard, M.P., A. C. M. Jackaman, I. H. McClure, R. L. Preston, A. H. Downes-Shaw.

Finance.—Com. James Bird, O.B.E., Lt. Col. W. A. Bristow, Maj. C. J. W. Darwin, D.S.O., C. R. Fairley, John Lord, J. Stewart Mallam, F. Handley Page, C.B.E., Lt. Col. D. C. Robinson, M.C.

House.—Flt. Lt. G. G. H. du Boulay, A. C. S. Irwin, Capt. A. G. Lamplugh, John Lord, J. Stewart Mallam, Maj. H. A. Petre, D.S.O., M.C., R. L. Preston, Lt. Col. D. C. Robinson, M.C.

Joint Standing.—*Royal Aero Club and Society of British Aircraft Constructors.*—Lt. Col. M. O'Gorman, C.B., W. Lindsay Everard, M.P. *Royal Aero Club, Royal Aeronautical Society and Air League.*—Lt. Col. M. O'Gorman, C.B., Lt. Col. J. T. C. Moore-Brabazon, M.C., M.P., Maj. H. A. Petre, D.S.O., M.C.

General Council of Associated Light Aeroplane Clubs.—*Royal Aero Club Representatives.*—Maj. K. M. Beaumont, D.S.O., Lt. Col. M. O. Darby, O.B.E., Maj. A. Goodfellow, Lord Gorell, C.B.E., M.C., Capt. A. G. Lamplugh, Lt. Col. M. O'Gorman, C.B.

Aviators' Certificates.—The following Aviators' Certificates were granted:—

AVIATORS' CERTIFICATES			
10,378	Jawad Hussein	Marshall's Fl. School	26.2.32
10,379	Henry Arthur Frederick Hohler	Airwork School of Fl.	28.2.32
10,380	Vivian Steel Parker		28.2.32
10,381	Gerald Alexander Kennedy	Air Service Training, Ltd.	28.2.32
10,382	Leonard M. Kelsea-Williams	Air Service Training, Ltd.	3.3.32
10,383	Ronald Ivor Thomas Lloyd	Yorkshire Ae.C. (N.F.S.)	4.3.32
10,384	Arthur Westear Weyman	Brooklands School of Fl.	4.3.32
10,385	Richard Ormonde Shuttleworth	Brooklands School of Fl.	3.3.32
10,386	Raymond Alfred Bailey	Cinque Ports Fl.C.	3.3.32
10,387	Hubert James Highwood	Maidstone School of Fl.	4.3.32
10,388	Susan Mabel Christian Ramsay	Kent Fl.C.	3.3.32
10,389	Thomas A. Symington Davie	Scottish Fl.C.	26.2.32
10,390	Harold Edgar Bradley	Northern Air Lines	4.3.32
10,391	Leonard Alfred Shepherd	Northants Ae.C.	28.2.32
10,392	Henry Wilfred Ward	Herts & Essex Ae.C.	6.3.32
10,393	George Edward Orr Walker	Phillips & Powis	10.3.32
10,394	Cecil Rhodes Field	Airwork School of Fl.	12.3.32
10,395	Victor Austin Bruce	Blackpool & Fylde (N.F.S.)	8.3.32
10,396	Richard Birrell Carruthers	Scottish Fl.C.	25.2.32
10,397	Peter Morrison	Scottish Fl.C.	2.3.32
10,398	John McKillop Fleming	Scottish Fl.C.	26.2.32
10,399	Edward Lister	Yorkshire Ae.C.	10.3.32
10,400	Ernest Gomez-Cornejo	Norfolk & Norwich Ae.C.	5.3.32
10,401	Robert Pearce Harvey	Eastern Counties Ae.C.	12.3.32
10,402	Thomas Harold Chamberlain	Herts & Essex Ae.C.	16.3.32
10,403	Thomas Albert Maddox	Eastern Counties Ae.C.	16.3.32
10,404	Charles Winter Scott	Phillips & Powis	13.3.32
10,405	Roper Brown	Eastern Counties Ae.C.	16.3.32
10,406	Ronald George Ballantine	British Air Transport	16.3.32
10,407	Walter Osmond Pye	London Ae.C.	12.3.32
10,408	Adam Maitland	Yorkshire Ae.C.	13.3.32
10,409	Norman Ellison Waugh	Eastern Counties Ae.C.	17.3.32
10,410	Thomas W. Boyd Guthrie	Scottish Fl.C.	2.3.32
10,411	William George Macdonald	Rollason Muir & Rickard	12.3.32
10,412	Raymond Barrington Brock	London Ae.C.	19.12.31
10,413	Charles Stanley Glass	North Staffs Ae.C.	20.3.32
10,414	Charles Jackson Spencer	North Staffs Ae.C.	19.3.32
10,415	Stephen Villiers Appleby	Airwork School of Fl.	19.3.32
10,416	Sydney Walter Slaughter	Brooklands School of Fl.	10.3.32
10,417	Dennis Ashworth Lettis	Surrey Fl. Services	16.3.32
10,418	Derek George Duval	Surrey Fl. Services	16.3.32
10,419	Stuart Sydney Horden	Brooklands School of Fl.	20.3.32
10,420	Cyril Benno Leslie Weiss	Brooklands School of Fl.	19.3.32
10,421	Hugh Lewis Pingo Lester		23.3.32
10,422	Eric Leslie Gandar Dower	Phillips & Powis	20.3.32
10,423	Harry William Horace Moore	Hanworth C. (N.F.S.)	21.3.32
10,424	James Martin	Scottish Fl. C.	18.3.32
10,425	Christopher M. C. Turner	Cinque Ports Fl. C.	22.3.32
10,426	Tom de Betou Carling	Brooklands School of Fl.	23.3.32
10,427	Spencer Bertram Horn	Eastern Counties Ae.C.	15.3.32
10,428	Richard Unwin Price	Brooklands School of Fl.	23.3.32
10,429	William Marion Holbeach	Brooklands School of Fl.	20.3.32
10,430	Benjamin Rodney Hadden	London Ae.C.	16.3.32
10,431	Philip Harvey Combe	Wiltshire School of Fl.	29.3.32
10,432	Harry Guy Bartholomew	Stag Lane Aerodrome	2.3.32
10,433	Sidney Guy Rodd	Eastern Counties Ae.C.	2.4.32
10,434	William Eric Davis	Cinque Ports Fl.C.	1.4.32
10,435	Wilfred Lawson Garner	Eastern Counties Ae.C.	4.4.32
10,436	Harold Robert Hodgson	Liverpool & District Ae.C.	5.4.32
10,437	Charles Harold Green	Midland Ae.C.	16.3.32
10,438	Kurt Bruegman	North Sea Aerial & General Transport	5.4.32
10,439	John Shirley Sandys Litchfield-Speer	Hanworth C (N.F.S.)	6.4.32
10,440	William James Nuthall	Hampshire Ae.C.	6.4.32
10,441	John Wheatcroft Shipley	Leicestershire Ae.C.	2.4.32
10,442	James Frederick Alexander	Wiltshire School of Fl.	3.4.32
10,443	Ernest Hugh McDougall	Hanworth C. (N.F.S.)	9.4.32
10,444	Norman Cleaveland	Kuala Lumpur Fl. C.	10.3.32
10,445	Samuel Edward Sprot	Newcastle Ae.C.	28.3.32
10,446	Nils Holby Houge	Newcastle Ae.C.	3.4.32
10,447	William Van Delden Paterson	Scottish Fl. C.	1.4.32
10,448	Douglas Charles Vincent Pelly	Hanworth C. (N.F.S.)	2.3.32
10,449	James Albert Jetman	Southern Ae.C.	31.3.32
10,450	Ernest Parr Hessey	London Ae.C.	13.4.32
10,451	John Charles Hugh Price	Royal Aircraft Establishment Ae.C.	3.4.32

Gliding Certificates.—19 Gliding Certificates were granted (these will be published next week).

Sub-Committees.—The Committee received and approved the reports from the following Committees:—Finance Committee, House Committee, Racing Committee.

International Commission for Air Navigation.—Lt. Col. M. O'Gorman was appointed to represent the Royal Aero Club at the Air Ministry Conference, to be held on May 10, 1932, to discuss the Agenda for the forthcoming Paris Conference of the International Commission for Air Navigation.

Offices: THE ROYAL AERO CLUB,
119, PICCADILLY, LONDON, W.1.
H. E. PERRIN, Secretary.

Private Flying & Gliding

AT LYMPNE

Saturday belied the pessimistic reports of the meteorological office at Lympne with the result that the crowd which turned up to the Cinque Ports Flying Club At Home far exceeded that which had been expected.

Since Brooklands took over the Club it has been forging steadily ahead, and under the managership of Mr. Eric Davis (brother of the well-known Capt. Duncan Davis, who is responsible for that unique "Brooklands Spirit" in Club flying) we look to it, with its growing membership, to become one of the major Clubs in the Southern Counties.

The affair of Saturday was preceded by a dinner and dance at the Hotel Majestic, Folkestone, on Friday evening. Over 120 members and guests turned up to this, and the extent to which they enjoyed themselves may be gauged by the fact that at 11.30 a.m. the following morning there were still only about six people out at the aerodrome! We were sorry that the patronage of any local celebrities had not been secured; the cachet given to flying dinners by the presence of civic dignitaries is a thing which we can ill afford to do without at present—but we understand that despite all efforts, it was impossible to find any sufficiently important personage who was free on that particular night.

The first item on the programme on Saturday morning was a display by F/O. R. A. C. Brie on one of the latest two-seater, three-blade model, "Autogiros." As may be expected, this machine was really the centre of interest during the day, and, moreover, being now fully licensed for joyriding, F/O. Brie was later kept hard at work.

Thereafter followed:—Shooting bottles from the air, a humorous item on the lines well known to our readers; Demonstrations of the Blackburn "Bluebird" and "Moth" by Mr. George Lowdell, whose instruction is so well appreciated at Brooklands; Balloon bursting by the Cinque Ports Club instructor, Mr. K. K. Brown, a feat which is far more difficult than it looks, especially when the air is as bumpy as it was on Saturday; Formation flying by Club aircraft, the formation was led by Mr. Ken Waller with Mr. Lowdell and Mr. Brown outside him, their excellence at this form of aerial drill was amazing and no one would have believed that they had not practised for a very long time, Mr. Brown is particularly to be congratulated as Mr. Waller is one of his pupils; besides these, what one might call Club items, there was a display by a flight from No. 25 (Fighter) Squadron from Hawkinge Aerodrome, which is just above Folkestone. This Squadron is famed for its aerial drill, and under Sqd. Ldr. W. E. G. Bryant, who recently took over the command from Wing Com. H. M. Probyn, this tradition is being upheld in an exemplary manner. Their latest equipment consists of Hawker "Furies" (Rolls-Royce Kestrels), and although they have had less than two months in which to practise with these aircraft their display can only be described as magnificent. For the drill the flight was led by Flt. Lt. H. I. Cozens (recently returned from the British Arctic Air Route Expedition), who had with him Flt. Lt. G. P. McDonald, and F/O's. N. Daunt, R. P. Garnons-Williams, and B. W. Knox. Their drill was an excellent exhibition of showmanship and all manœuvres were carried out away from the sun at the right height and distance from the aerodrome for the spectators to see to the best advantage. They changed their formations right over the

aerodrome so that on the whole we can say that it was one of the most interesting displays we have seen, and, needless to remark, their formations were practically perfect.

Following the drill came some flight aerobatics by F/O's. Knox, Garnons-Williams and A. E. Clouston, and finally some individual aerobatics by F/O. Clouston. The latter demonstrated the speed range of the "Fury" admirably, and the way in which he did a terrific dive at the aerodrome, followed by an upward spin, finishing with a "waffle" across the aerodrome at somewhere about 60 m.p.h., was most impressive.

Lympne being a Customs airport provided some interesting comparisons in aircraft during the afternoon, as we were treated to the spectacle of Fokkers, "Puss Moths," and others making their circuits or landing right in the middle of the display. Naturally, everything which could be done to keep the display away from the commercial business was done, but it certainly seemed that a little more care should have been taken to keep joyriding aircraft on the ground during the actual flying items. On several occasions there were instances of aircraft which were in the middle of a display being somewhat baulked by a joyriding aircraft, and, while there was not any real danger, yet this sort of thing is disturbing both to spectators and pilots alike.

In conclusion, we should like to congratulate the Club manager on his choice of loud-speaking equipment. This was the Fullagar System supplied by the Odeon Hall, Canterbury, which though using aluminium horns, was certainly the purest we have ever heard. The provision of pure and adequate equipment of this kind adds greatly to the pleasure of the spectators, and while the ordinary type with horns is often raucous, yet the open flat type hardly carries sufficiently strongly to overcome the noise of the aircraft engines. This Fullagar equipment, however, carried admirably while remaining absolutely pure.

Over 40 aircraft were to be seen on the aerodrome at one time and this alone is a fair gauge of the popularity of flying meetings like this one. We hope that this popularity is extended to the Club by an increase in their membership.

AT SYWELL

The fifth annual pageant at Sywell will be held on Whit-Monday, May 16, to which all private owners are



American interest in the cabin Autogiro at Hanworth: (Left to right) — Larsen, H. Pitcairn, A/M. J. G. Weir, Senor de la Cierva, T. Ray, R. A. C. Brie.

cordially invited. Particularly advantageous rates have been arranged for accommodation at an hotel in Northampton both for Sunday and Monday evenings, and a dinner and dance (dinner jackets) will be held on Monday evening after the pageant, to which it is hoped many of the visiting pilots will stay. The annual pageant at Sywell is invariably one of the most attractive of the flying club meetings, and we understand that those responsible for drawing up the programme for this year have surpassed themselves in the provision of interesting items.

AT CROYDON

An item of interest is the fact that Mr. S. F. Woods has now joined the firm of Rollason, Muir & Rickard as Chief Instructor. Mr. Woods is very well known at Croydon, having, until recently, been Chief Instructor with Surrey Flying Services.

AT READING

The "Moth" (Gipsy I) used for blind flying at the Phillips & Powis School of Flying has now been fitted with a new type of hood having a quick release which has been designed and made in the school workshops. It has proved highly successful and fits around the cockpit fairing very closely. The "Moth" (Gipsy) which Mr. J. A. Mollison flew from Australia to England has now been reconditioned at the School and sold to Mr. W. R. Westhead.

AT CHESTER-LE-STREET

A new flying club, to be called the Northern Aero Club, has been formed, something on the lines of the L.G.O.C. Flying Club, from the employees of the Northern Transport Co. By obtaining some 800 members at 2s. entrance fee and 6d. per week, it is hoped to be able to provide flying instruction at 10s. per hour. On Sunday, May 1, Brian Lewis & Co. and Redwing Aircraft, Ltd., sent up machines to give the existing members their first taste of flying.

AT STAG LANE

Among the recently joined members is Mr. A. R. Robertson, who was second pilot to Commercial Airways of Canada and who flew the first scheduled air mail route to the Arctic, and Mr. R. Mussard, a Frenchman who has flown extensively in Morocco. Both he and the former gentleman have found that the weather of their native countries is much to be preferred to that of Stag Lane. Others who have come from far and wide are Miss F. O'Connell and Mr. Mostyn, both of whom have arrived from Central Africa. Two members, Mr. G. M. Harris and Mr. D. Peacock, have now formed a joy-riding company with the name of Air Transport, and they are already operating "Spartan" three-seaters at various places on the South Coast.

AT RATCLIFFE

The meeting which was arranged to take place on Saturday, June 11, has now been altered to Saturday, June 4. This will be a combined Motor Gymkhana and Flying Display. Other important dates to notice in connection with the Leicestershire Aero Club are the Night Flying Display at Ratcliffe on June 17 and 18, the National Aviation Day Display at Desford on July 14, and the special Divine Service at Ratcliffe on September 4. Desford Aerodrome will be closed from August 19-26 for the summer holidays.

AT HANWORTH

With the improving weather the amount of private and club flying has increased greatly. Among the interesting machines recently seen at the aerodrome were the "Bellanca" belonging to Maj. Sidney Cotton and the "Stinson Junior" belonging to Mr. James and piloted by Mr. Cathcart Jones. Taxi work is now on the increase and the N.F.S. pilots have been kept busy flying to places as widely separated as Plymouth and Berlin. On Thursday, April 28, some 50 students of the College of Aeronautical Engineering visited Hanworth to view the latest Autogiro. Mr. R. A. C. Brie and Mr. Marsh (who is also now flying for the Autogiro Co.) took up the majority of these visitors, who were naturally most impressed with their first flights in this type.

AT BEKESBOURNE

The Kent Flying Club, which has been formed as an offshoot of Kent Aircraft Services, Ltd., at Bekesbourne Aerodrome some six months ago, has been going steadily ahead. The hangar on the aerodrome has now been

equipped with workshops, offices, a comfortable bar and lounge. Flt. Lt. J. H. Barringer has been appointed instructor, and under his careful tuition Mr. R. C. Ramsay, who is 71 years of age, has recently successfully passed the tests for his "A" pilot's licence after only 20 hours' dual. The flying rates of this club are £2 per hour dual and 30s. solo, while the annual subscription is £3 3s. Flying hours for the month of March were 51 hr. 20 min.

AT CRAMLINGTON

Flying time for the month of April by the Newcastle-on-Tyne Aero Club was 81 hr. 20 min.; high west winds and fog are accountable for this small amount. On Friday, April 29, the Hon. Rupert Freeman-Mitford flew up from Hamble in the Imperial Airways "Wessex," having left the White Star Liner *Majestic* in a special tender at Southampton. He chartered one of the club "Moths" and flew over to Otterburn, where his mother, the Dowager Lady Redesdale, was lying seriously ill. Among the entries which have been received for the London-Newcastle Race which starts from Brooklands on May 28, are those of the Hon. Lady Bailey flying a "Puss Moth," Miss Winifred Brown flying a sports "Avian," and Lt. Col. L. A. Strange flying a "Spartan." The closing date for entry forms, it should be remembered, is May 10. A meeting is being run at Cramlington in connection with the finish of this race. During this day there will also be a race of three circuits around a course adjacent to the aerodrome, for all types of aircraft. Any private owner wishing to take part should forward his name to the Hon. Sec., Newcastle-on-Tyne Aero Club, Cramlington.

AT HOOTON

The Annual General Meeting of the Liverpool and District Aero Club took place on Saturday, April 30. On the same day there was an annual landing competition against the senior and junior teams of the Lancashire Aero Club. Lt. Col. H. Stevenson, of Osterley, Hooton Park, has taken over the various sports facilities on the Hooton Hall Estate as an independent undertaking. He is working in close collaboration with the club and members will be entitled to special privileges. Work is already proceeding on one tennis and two badminton courts, while the two existing squash courts are being reconditioned. Changing rooms and showers are also being provided. The map-reading competition held on March 12 was flown off in good weather by an entry of 22 members. The first three were Mr. E. N. Crowder, Mr. G. E. Waterworth and Mr. W. H. Varley.

An innovation has been entertaining small parties from various local firms. These have invariably proved unqualified successes, and the parties who have visited the club have been from Alfred Holt & Co., Lever Bros., George Henry Lee & Co., Bon Marché, Liverpool, Lloyds Bank, Westminster Bank, and the staff of Bootle Town Hall, while Mr. Crawshaw has organised two parties from Southport. The Finance Committee of the Liverpool Corporation proposes to decorate and adapt one of the farmhouses on the Speke Estate as accommodation for pupils and pilots using that aerodrome.

The latest in Autogiros, namely, that which has been constructed in the Comper Works, and is a single-seater with Pobjoy engine, has recently made its first successful test flight. During the week the aerodrome has been visited by Mr. Harold Pitcairn, Señor De La Cierva and Mr. R. A. C. Brie, as well as other pilots who have come over from America.

AT SKEGNESS

At the pageant to be held at Skegness on May 15 there will be a landing competition for which the first prize will be a Silver Cup and £10. For the handicap race from Skegness to Tollerton and back there will be a Silver Cup and £20, while for the closed-circuit short-distance race there will be a Cup and £10. For each of these events there will also be second and third prizes.

AT COVENTRY

As has already been announced in FLIGHT, the Coventry Aero Club will be holding their Air Pageant at Whitley Aerodrome on Whit-Saturday, May 14. The meeting will be held under the competition rules of the Royal Aero Club and F.A.I. All visiting pilots will be the guests of the Club. No entrance fees will be charged for any events, and entries will be taken on the aerodrome until 2 p.m. on Saturday. The Hon. Secretary will, however, be glad to hear from pilots of their intention to be

present. It should be noted that the last event is timed for 5.30 p.m. in order that those visitors who wish to attend the dinner and dance at Skegness will have time to do so. Pilots are asked to arrive at the aerodrome before 2.30 p.m. Particular care will be needed when landing, as from 10 a.m. onwards there will be joy riding and exhibition flights in progress. The control tent at which each pilot should report on landing will be situated on the eastern side of the aerodrome. Hangar space will not be available. Competitors should bring their own picketing gear. Hotel accommodation can be arranged in Coventry at special rates if required. The programme will include an arrival competition for the first machine to cross the finishing line after 12.30 p.m. G.M.T. Prizes for this will be £5, £3 and £1. The machines must have travelled from aerodromes not less than 25 miles away. Loitering in the neighbourhood will not be permitted. There will be a Reliability Trial round a course of 70 to 90 miles at a given ground speed. For the landing competition competitors will have to climb to 1,000 ft., loop and land over and as near to the barrier as possible.

AT BRISTOL

The Bristol and Wessex Aeroplane Club are organising a dance at the Grand Hotel, Bristol, on the evening of their summer flying meeting, to be held on June 4. All visitors arriving at Bristol by air are cordially invited to attend as guests of the club. Entries for the Air League Challenge Trophy race, which is to be flown on that day, close on May 17. Late entries at double fee will be accepted up to May 24. Forms can be obtained from the Manager, Bristol Airport.

AT WHEATHAMPSTEAD

The annual Mounted Gymkhana and Flying Display which has been arranged by the Hospitals Fête Committee in co-operation with the Hertfordshire Aero Club and the de Havilland Flying School will take place at Wheathampstead on Whit-Monday, May 16. The Flying Display will commence with a rally at 10 a.m. and will finish at 1 p.m., being followed immediately by the Mounted Gymkhana. Visitors by air should land at Hatfield Aerodrome, where they will find arrangements made for them.

Airport News

CROYDON

THE week under review commenced with Jack Hylton and his band flying to Brussels. A Handley Page 42 was specially chartered on Sunday to convey the band of 26 musicians and their instruments; they returned on Monday.

On Monday, Mr. Thompson took a passenger in a special charter machine to Zagreb, in Jugoslavia, to visit a sick relative. Although the machine was not chartered until after lunch, he made Frankfurt that evening and completed the journey next morning.

On Tuesday, Lord Hailsham arrived on the early morning Imperial Airways service from Paris, returning to Paris again on Wednesday.

Dr. Rohrbach, the famous German aircraft designer, was a passenger on the outward service of the Deutsche Luft Hansa Service on Tuesday.

In the afternoon Miss Telhein arrived from Cologne, a lady reputed to be the champion yodeller of Europe. She gave a demonstration of her prowess for the benefit of some press men, much to the amusement of the staff.

On Wednesday, a group of railway directors visited

Imperial Airways, for the purpose of studying their passengers. Let us hope they benefited by what they saw.

The summer services are now in full swing. Loads are well up to standard, and Imperial Airways are certainly carrying an increased number of passengers.

Many at Croydon were grieved to hear of the death of Mr. Jack Tyler, of the de Havilland Aircraft Co. We on the aerodrome knew him as a first-rate pilot and a good fellow. We should like to take this opportunity to extend our sympathies to Messrs. de Havilland's.

The acetylene-gas boundary-marking lights are to be replaced by an electric pattern controlled from the Control Tower, and it is rumoured that Neon landing lights will be installed during the next few months.

The Royal Dutch Air Lines have now fallen into line with all other operating companies, and have placed their pilots into uniform—and very smart they look.

There was plenty of joy-riding over the week-end owing to the fine weather.

Traffic figures for the week:—Passengers, 1,014; freight, 49 tons. P. B.

FROM HESTON

MONDAY, April 25.—Capt. M. Diamint, with Mr. A. V. Sale, the General Manager of Dominion Motor Spirit Co., Ltd., made an early departure from Heston in the company's "Puss Moth" to enable Mr. Sale to keep an appointment in Paris during the morning. They returned to Heston the same day.

Another of Airwork School of Flying pupils has gained his "A" licence in quick time in the person of Mr. R. W. Thomas, who commenced instruction on April 19 and completed his three hours' solo late on the 24th.

Miss Winifred Spooner took a passenger to Paris in Mr. Lindsay Everard's "Puss Moth," leaving Heston at 2.55 p.m. and landing on her return at 8.25 p.m.

TUESDAY, April 26.—Mr. Ledlie, of Personal Flying Services, Ltd., took two passengers to Brussels in the "Desoutter" G-ABFO.

Capt. "Tony" Spooner left Heston today to take up his appointment as Chief Instructor to Misr-Airwork, Cairo, an associated company of Airwork, Ltd.

WEDNESDAY, April 27.—Lt. Cathcart-Jones arrived from Paris in Mr. James' "Stinson, Jnr."

Mrs. Denman, the wife of Mr. R. Denman, a director of Airwork, Ltd., made her first solo flight to-day.

THURSDAY, April 28.—Among the pupils of the Flying School to-day was the son of Mr. G. N. Wilson, of Shell-B.P., Ltd., who is not yet 16 years of age.

FRIDAY, April 29.—Lady Cunliffe Lister and her young son were among those who went up in School machines.

Mr. "Bill" Styran, of B.A.N. Co., arrived back with Mr. MacGilchrist in a "Puss Moth" from Russia.

SATURDAY, April 30.—Four machines of private owners left in a bunch for Paris, each with a passenger.

Lord Willoughby de Broke, with Mr. R. W. Thomas as passenger, left in his "Puss Moth" G-ABNC for Brussels. They will tour Belgium, France, Poland and Germany.

Mr. Jackaman, with two passengers, left for Paris.

Among the entries for the *Morning Post* race, to be held on May 21, and starting and finishing at Heston, was that of Flt. Lt. G. H. Stainforth. The prizes for this race, which include several from various aircraft instrument makers, will be on view at Heston, Thursday next.

Brian Lewis & Co. have entered into possession of their new office at Heston. Mr. "Bats" Page looked very proud seated amongst the latest in modern equipment.

SUNDAY, May 1.—Mr. Cotton arrived from Paris in his "Bellanca" and cleared Customs inwards. It was in this machine he volunteered to search for Mr. Courtauld in the Arctic.

The flying tests of the six-cylinder-in-line air-cooled 150-h.p. Napier engine, fitted in a "Spartan" (illustrated in *Flight* for April 29, page 382), have been continued throughout the week with the aid of a relay of pilots. The staff of the Airwork School of Flying have been unable to help in these tests, having been fully occupied with instruction all the week.

Airport Development

(Concluded from page 380)



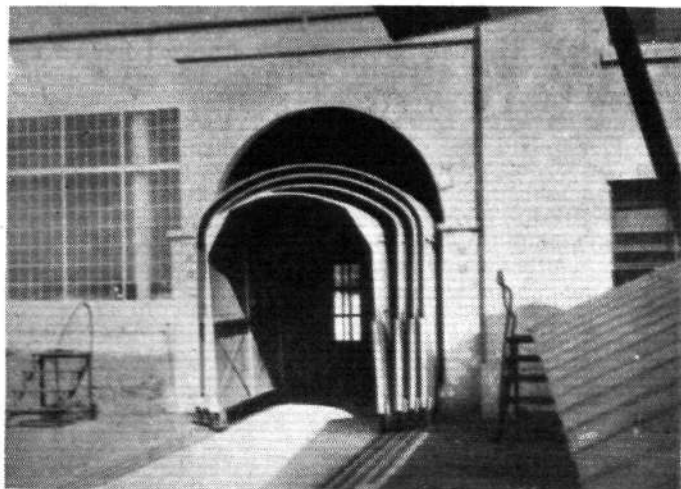
THIS state of affairs is an inevitable one where air transport is concerned, since where time is of vital importance and passengers are to be transferred from one service to another at a busy traffic junction, the arrivals and departures must be timed as far as possible to synchronise. It was therefore found desirable to erect in front of the terminal building a semi-circular fence enclosing an area colloquially known as the "bull pen," the fence being provided with a number of gates opposite which aircraft could be stationed for loading.

There is very little doubt that the proper development of passenger handling facilities on these lines will greatly simplify operation and improve the working conditions for operating staff. It seems likely that what was originally the bull pen will become transformed rather in accordance with the principles of railway station design into what is known as a "circulating area." This area will be used to accommodate the immediate needs of passengers and their friends for newspapers, postal and telegraph facilities, etc. From it will lead off a number of loading canopies which will be clearly marked after the manner of platform entrances, with particulars as to the destination and time of departure of the respective service. Approach to the canopies will be controlled by gates, and where customs traffic is being dealt with there will no doubt be a dividing barrier between the waiting public and the arriving passengers, arranged in the same manner as at railway platforms where Continental traffic is handled. As development proceeds, construction of the canopies may become more elaborate, and steel and glass may replace canvas. Alternatively, they may be replaced by underground tunnels leading to the points of embarkation. At an airport such as Croydon it would seem desirable to provide in the very near future for the simultaneous loading of four or five machines and for an ultimate capacity of twice this number.

Probably the requirements outlined above, together with the tendency for terminal and station buildings to occupy sites projecting inwards towards the landing area, will influence these buildings to a plan rather convex than concave. Of this Burbank, Buffalo, and Lyon are examples.

Leaving the terminal building now for the time being, we may turn to the buildings designed to accommodate aircraft. The first noticeable tendency when an examination of types of hangar is made is that they

With this week's instalment we conclude Mr. Norman's paper on the Airport Development as seen by Mr. Dawbarn and himself during their visit to the U.S.A.



The passengers' embarking canopy at Oakland.

are getting larger and larger. In spite of the prophecy that big aircraft will be treated as ships and moored out of doors all their life, there is a continued reluctance on the part of operators to expose their fleets to the weather, and designers are producing wider and wider spans and larger door openings in anticipation of the trend of aircraft design. The nature of hangar requirements is likely to vary more than that of other facilities as the result of local conditions. In this country where extremes of temperature are not encountered, the problem of heating is less important than in North America. On the other hand, the European climate produces more rapid deterioration than is encountered in a less moist and warmer climate.

It is noticeable whatever the size and purposes of a hangar some administrative or workshop accommodation is always required in connection with its use. In the United States the tendency has been to construct an office block at each or one end of the building. It seems likely that since deep trusses are required to bridge the wide spans of modern hangars, space otherwise wasted in the roof can be conveniently used for office purposes. Where a building is to be used for service and repair work, it is likely that a complete upper floor may be desirable, although I have not yet seen a building constructed on this principle.

I do not consider it at all certain that airport buildings will always be of restricted height. The demand for accommodation will probably make high buildings absolutely necessary, and if they are correctly planned they will offer no obstruction to aircraft and will naturally improve the efficiency and appearance of the port.

For all large buildings steel construction has been adopted in America. In the large hangar at Burbank, Cal., an area the size of a football ground is covered by steel structure having only four supporting pillars arranged some 60 ft. in from the doors. The steel work is seen to be a very complex sort of umbrella design, using comparatively light sections. As examples of other large buildings, the main hangar at Detroit and a new building at Kansas City may be quoted. In France I have seen examples of very fine buildings of reinforced concrete construction with brick or tiled infilling. In examining the problem generally in America, it strikes one that the more recently constructed buildings have been of much less ambitious design than those put up a few years ago. For instance, the hangars at the new airport at San Francisco Bay are proving satisfactory in use, and, covered with corrugated asbestos, must have cost very much less than those previously discussed. As a successful combination of artistic effect with economical construction, I consider the hangar of corrugated asbestos at Sacramento to be outstanding.

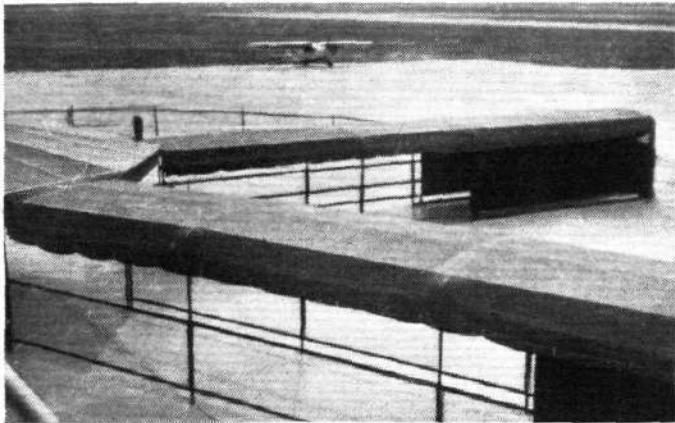


The control tower on the massive hangar-cum-station building at Wayne County.



The hangar at Roosevelt Field. An example of expensive construction.

From an operational point of view, perhaps the most important feature of any hangar is its doors. These may be constructed in panels supported on overhead or ground tracks and running on rails to the sides, or alternatively, they may be constructed in small sections hinged together and arranged to close up like a concertina at the sides of the opening. A very striking form of doorway, known as the "overhead canopy" door, was seen in America, and appeared to be ideal from an operating point of view. The illustration shows the way in which the doors open, control being by a series of electric push buttons. From the point of view of expense, doors supported at the bottom are likely to be cheaper than those hung from above, and there appears to be no reason why they should not be absolutely satisfactory in use.



The bull pen at Indianapolis.

Where very large areas are enclosed, protection against fire is of increasing importance. Elaborate spray installations, automatically controlled, have been installed in a number of American hangars. The methods employed are well illustrated by the arrangements in the municipal hangar at Detroit. A system of pipes and jets is fixed in the steelwork of the roof and a similar system is laid in the cement of the floor, the jets being covered by small hinged flaps. Control of the whole apparatus is automatic,

and is particularly interesting in this instance, since releasing mechanism is actuated not by the fusible link method when a predetermined high temperature is reached, but by an apparatus depending upon the rate of rise in temperature. Experiments with fires of petrol and aeroplane material have proved the system to be absolutely effective within comparatively few seconds.

Hangar heating presents particular problems, first because the fire hazard must be eliminated, and, secondly, because an opening of large door areas may lead to a sudden drop in temperature unless very extensive reserve heating is available. The use of hot water or steam pipes has not proved sufficiently flexible to be effective. Hot air distributed by overhead ducts from a central heating chamber, where oil, coal or gas is consumed, has been found the most satisfactory method. The location of the hot air outlets is important. These should be arranged close to the door openings, discharging inwards.

Where a limited traffic is to be handled on a newly-constructed airport, a special kind of building has been evolved in America which has not appeared over here. This is a combined hangar and terminal building. It would appear particularly suited to an intermediate station on a main through airway.

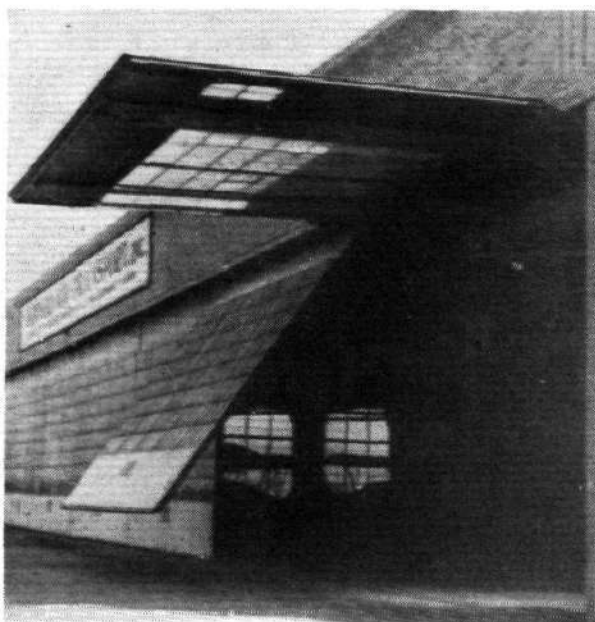
In considering airport equipment, the first and most important item is proper indication of wind direction, since an absolutely clearly defined direction for landing at all times is the first essential to proper traffic control and safe operation. The old-fashioned wind sleeve, suitable for the country landing fields, is inadequate to the requirements of an airport. An apparatus is needed which in conditions of normal visibility can be seen clearly from several miles away, showing distinctly the direction into which aircraft must land in whatever wind may be blowing. The most dangerous time is when there is no wind at all, since pilots, unless rigidly controlled, may be inclined to take off or land in whatever direction is most convenient to them. In normal circumstances, a smoke pot in the centre of the aerodrome is an admirable wind indicator, but in conditions of flat calm or in gales and snow, I do not consider its indication to be sufficiently definite to be absolutely satisfactory. Also it is difficult to illuminate at night. It seems, therefore, that the best arrangement is a large "T" or other shaped indicator pivoted to swing into the prevailing wind or in a calm to



The hangar at Sacramento. An example of cheap construction.

take up some predetermined attitude. In my opinion, wind indicators should be very much larger than they are at present, and when I discussed the matter with American airport managers, I found them to be of the same opinion. For a large airport, an indicator 60 to 100 ft. long, displayed in the most prominent position possible, would seem desirable.

Operation of aircraft at night is increasing rapidly. In America 25 per cent. of the scheduled traffic is flown after dark. In spite of the volume of this traffic, however, a number of different systems of night lighting are in use, and no doubt considerable further development will take place before a universal method is arrived at. A system of boundary and obstruction lights is, of course, essential. On certain runway airports the runways themselves are outlined by small lights. A row on each side of the runway has been mounted in the same way as boundary lights, while another method is to sink lights in the centre of the runway 100 ft. apart, and mounted in flush-type fittings which are able to withstand the passage of aeroplanes. This last system I found to be universally approved by pilots. It was emphasised, however, that wherever any volume of traffic is to be handled, a degree of general floodlighting is essential. At some ports this was produced by a number of independent projectors of the commercial type, mounted in groups and fixed with divergent beams to cover the required area, while at others a large floodlight unit with dioptric lens was employed. The latter system appears to be gaining in popularity. The use of mobile floodlight units has been abandoned in America as too cumbersome in operation, where the light may be required at a number of points at short intervals all through the night. The alternative has been to have two or three floodlights in permanent mountings at positions where they will provide jointly or separately the illumination required for landing in any direction. Alternatively, a single floodlight is used, mounted upon or adjacent to the terminal building. The normal practice is to mount the floodlight from 10 to 30 ft. above the ground, which improves the effect of the illumination, although one would have thought that it would make landing difficult where ground mist is encountered. A device is incor-



Opening the canopy-type doors at Burbank.

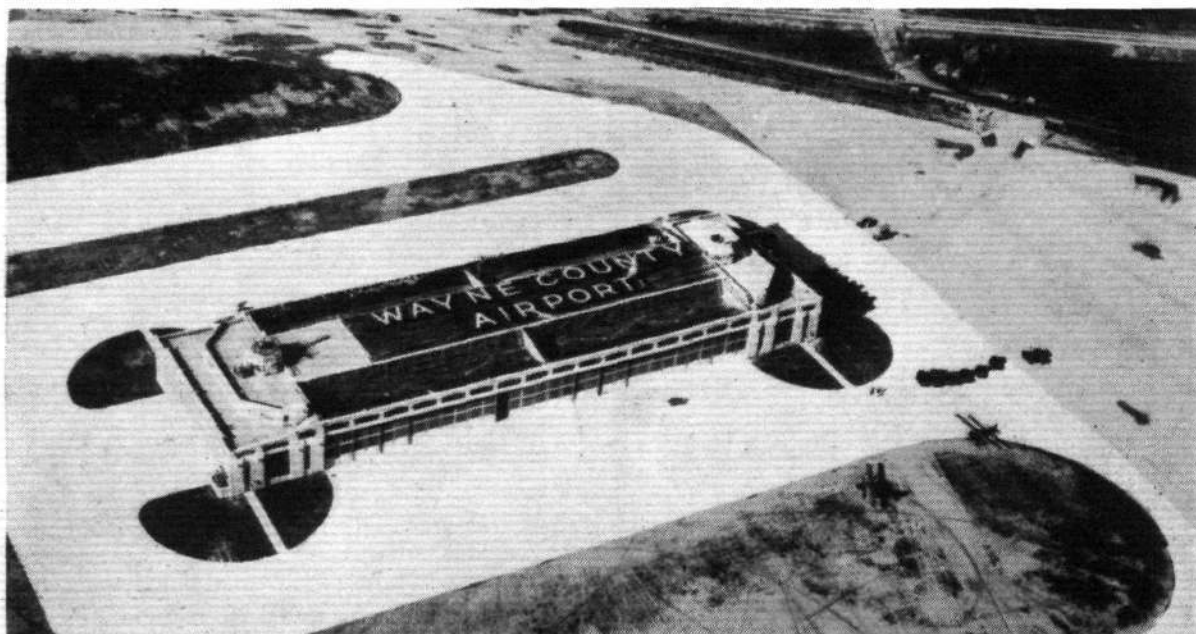
porated in the lamp to eliminate dazzle from the pilot even when he is landing approximately towards the light. This system is the more economical of the two, and has the added advantage that it protects the pilot of the machine from all glare which may be reflected from the wings and windscreen of the aircraft when landings are being made by an ordinary floodlight. It is curious that this system of night lighting, though economical and popular in use in America, has not been introduced before in Europe.

Another important feature of night lighting is the airport beacon, usually of the rotating or flashing type, and mounted upon the terminal building. Neon beacons have not proved of much value. It is essential, of course, that the wind indicator be adequately illuminated at night. At some airports this is used as a means

of signalling pilots that conditions are favourable or unfavourable for landing. In the former case, the wind indicator is lit by green Neon tubes, while if dangerous conditions prevail, the colour is changed to red.

An item which must early engage the attention of the air planner is the airport wireless station. Where a beacon is to be installed, there would appear to be a good deal to be said in favour of its installation in the centre of the major building block, where its aerials could extend above the approach road and car-parking area and where, though near the centre of the landing area, it would cause the minimum obstruction to flying. The aerials of the airport transmitter station could conveniently be arranged some distance from the aerodrome. In this connection, it is notable that in America, where several air companies were operating on the same port, each had its own radio transmitting station, and although several worked on the same wave length as the control tower, no confusion seemed to result.

The provision of suitable fuel supply points has been a problem of aerodrome designers in the past. For the small type of aeroplane, pumps with overhead swing arms have proved satisfactory, but these are useless for larger machines. Underground supply to a hose pit located well out on the apron has proved satisfactory up to a point and is widely used in Europe and America. Several proprietary forms of pit with meter and hose reel are satis-



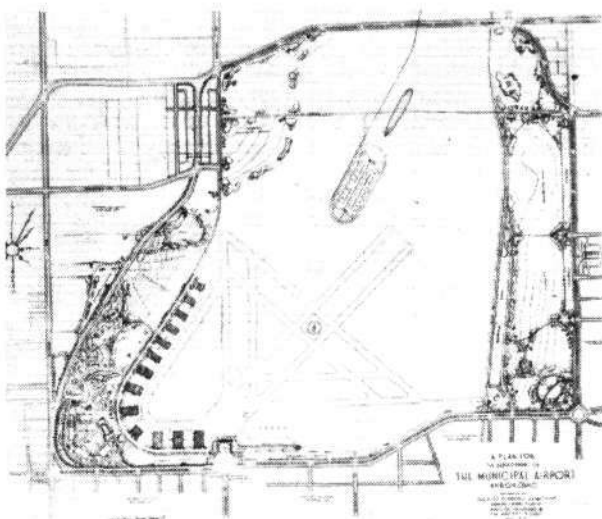
An air view of the combined hangar and station building at Wayne County Airport.

factory in use, in spite of the problem of drainage of the pit and the risk of excessive wear of the expensive hose employed. There is to-day, however, a marked tendency to abandon the practice of bringing the aircraft to the fuel point in favour of the rather more logical method of bringing the fuel to the machine in a specially constructed lorry. I think there is little doubt that this method will supersede the fixed refuelling point, although bulk storage may still be necessary in the vicinity of the airport. Those generally in use carried oil as well as "gas" and gave rapid and efficient service.

We have now considered the planning of the airport within its boundaries and looked for a moment at the different types of building that may surround it. The more important items of equipment have been superficially dealt with, and it only remains to view the airport as a co-ordinated whole in the plan of the area it serves. If the future is to be rightly provided for, it is now that steps should be taken, for the airport will undoubtedly exercise an important influence upon the surrounding district. This is likely to become in time completely developed, and the plan should certainly be drawn so that the open spaces allowed for may be in co-ordination with the requirements of air traffic. In the immediate vicinity of the landing ground, lanes of approach should be zoned to prevent the construction of very high buildings which may cause obstructions. The necessity for forced landing grounds in the near vicinity suggests that open spaces should be located as nearly as possible in prolongation of the flightways.

There is a further requirement which seems to me likely, although I have not seen it referred to before. I believe that for the proper control of aerial traffic in the future, signalling stations will be required at some distance from the boundary of the airport to indicate to approaching aircraft the beginning of the landing zone it is to use and to show the exact line of approach.

From another point of view, the airport should offer an attractive opportunity to the town planner. As a huge open space, the surroundings of which are perhaps less suitable for residential than for other purposes, it would seem to be an ideal basis for development of park areas and recreational centres. In this connection, the example of Akron is interesting. The aerodrome itself is a large area, and besides the enormous airship shed, has an excellent terminal building. Double runways have been planned and the hangars set back under the lee of the



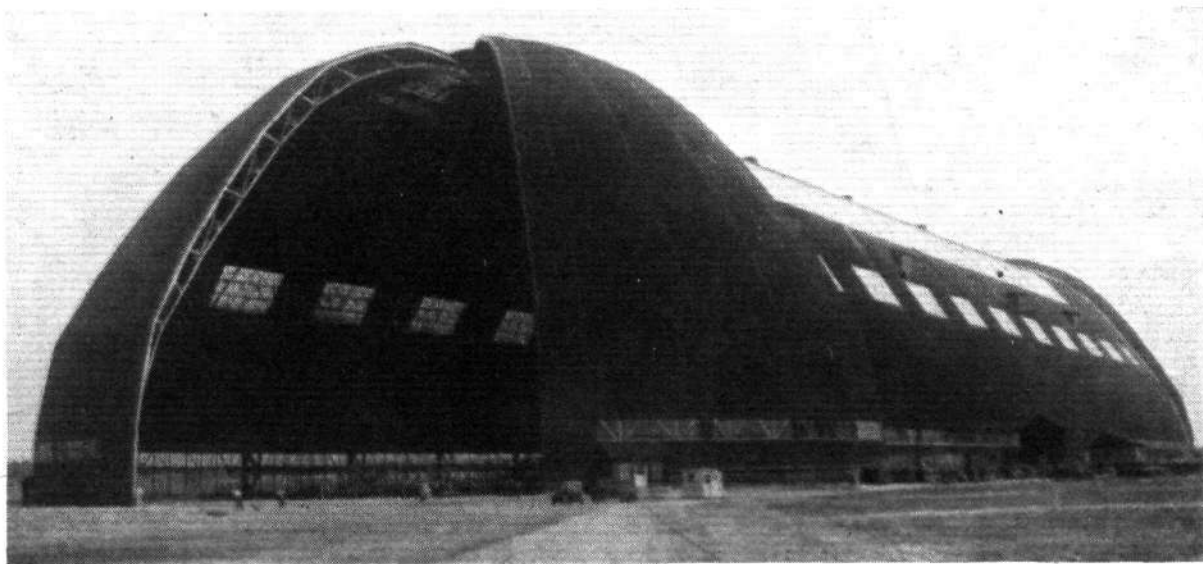
The plan of the Akron Airport.

hill. The surrounding area has been very carefully laid out by the Town Park Committee. A fine boulevard is being built to lead round the brow of the hill, and at a commanding point the city's war memorial is located. Between this road and the aerodrome, the country is being developed as a public park. A convenient depression of the ground is being made into an open-air stadium, while a hill at another point is being specially arranged as a camping ground for visitors. The equipment of the area for camping includes elaborate provisions for water supply and sanitary arrangements. At another point the park is being specially equipped for picnickers, so here also the equipment is complete, for each pitch is provided with a

gas stove and a set of utensils. The attractive surroundings, the wide views and the varied facilities available will undoubtedly make this airport the recreational centre of the whole district, although first-class communications maintain it in the closest relation to the business centre of the town.

If I have to-night particularly stressed the views which have governed American development, and interpolated at times some ideas of my own, it has not been with the idea of finally stating what has got to be done, but with the quite contrary intention of stimulating interest in the fascinating question of air development on the ground, which has in the past been so much less studied than the air. I am prepared to be confounded on every point if only the correct solutions are widely published and the minds of those responsible made fully aware of the necessity for present action if the requirements of future generations are to be met.

After the lecture there was the usual discussion, in which many people took part. In reply to their questions, Mr. Norman said that he quite agreed about black cotton soil being very bad, particularly in spring, but otherwise, as far as he knew, they did not have great trouble with it. As regards the difficulty of landing light aircraft on runways which were not dead into wind, he himself had found no such difficulty with a "Puss Moth," as it was generally possible to land on a line somewhat across the runway, and therefore get practically into wind. He agreed, he said, that airports must be developed in conjunction with the town-planning scheme. He agreed that there was certainly a need for economy in the development of air-



The huge airship shed at Akron.

ports, and he had stressed that point by referring to the more modern type of hangar construction, which was certainly cheaper than the older hangars. The wireless beacon, he thought, would not be very much in the way of the landing aircraft provided it was situated at the apex of the station building when this was built out in wedge or convex form on to the aerodrome. The combined station building and hangar was, he felt, particularly good for intermediate airports, and offered many attractive features. The overhead canopy doors were worked by a 3-h.p. electrical motor. There was, he said, a mechanical means of opening these doors, which was situated in the roof. The passengers' embarking canopy was quite easily run out by two men, and could be completely fixed in less than two minutes. There were, he said, some of the American airports which belonged to the railways, notably that of Port Columbus. He certainly

thought that legislation would soon be necessary with regard to the buildings around aerodromes and also for the compulsory acquisition of property. Many airports were, he regretted, at tremendous distances from their towns, that of New York being some 29 miles out, and on the whole they were at greater distances than in Europe. The methods of signalling to incoming and outgoing aircraft were varied: at some airports lamps were used, at others flags. Generally speaking, the majority of airports were municipally owned. He did not think that runways would be necessitated in this country until the traffic had grown to such proportions that it wore out the grass. He felt that 150 movements per hour in each direction would be the approximate limit of safety on the average airport. Both wireless direction beacons and Neon lights were used at many of the American airports to make night flying and flying in fog safer.



METAL PARTS AND THEIR PROTECTION

ALTHOUGH very great strides have been made in recent years in the production and application of rustless steels, the stage has not yet been reached where every part of an all-metal aircraft can be made of this material. Of all the remaining metals used in aircraft construction it is true to say that, in spite of the excellence of their physical and mechanical properties, they are subject, to a greater or smaller extent, to the ill-effects of rust or, as we more usually term it nowadays, corrosion. This fact is, of course, well realised, and every possible precaution is taken to protect the metals by some form of coating, which may take the form of anodic treatment of duralumin, an outer thin layer of aluminium on a duralumin sheet, as in "Alclad," or zinc, cadmium or chromium layers electrically or otherwise deposited. Of all these protections it may be said that they suffer from the disadvantage that a scratch which penetrates the protective coating necessitates immediate treatment, and this may not always be easy to give when the aircraft in question has been put in service.

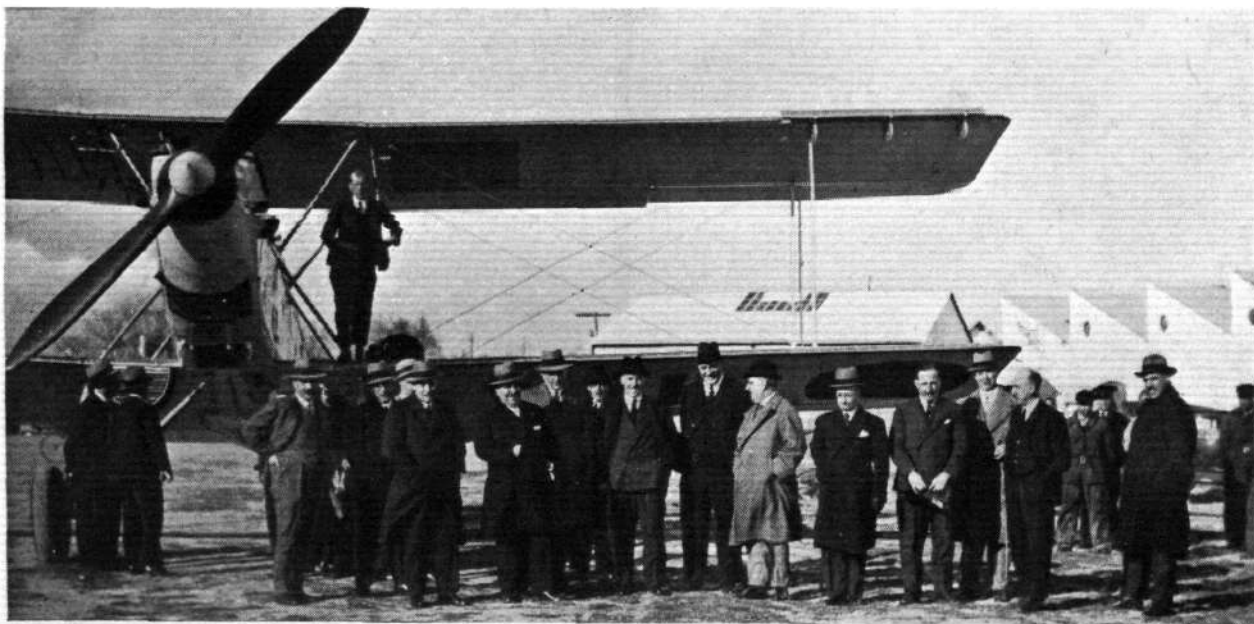
Realising these problems, the well-known firm of Titanine-Emaillite, Ltd., of 166, Piccadilly, has devoted extensive research to the development of coatings which, while affording excellent protection, can be readily repaired in case of scratches, and are easily removable if inspection of the surface is desired.

The firm has recently produced a very valuable and informative brochure on this subject, entitled "Titanine Specifications for the Treatment of Metal Parts of Aircraft," which should be of very great practical value to all manufacturers and users of aircraft. We understand

that a copy of this brochure can be obtained by any responsible person or firm making application in writing.

The brochure explains in detail the various protective coatings available, and a most ingenious scheme of suggestions for the use of the most suitable coating under any given circumstances on any particular part of an aircraft has been evolved, from which the user should be able, with a very minimum of trouble, to select the coating best suited to his needs. Briefly explained, the scheme consists in letters following the name of the particular coating, indicating the manner of application, such as, for example, B for brush application, S for spray, and D for dipping. The newly-introduced "Lumilac" lacquer is dealt with very fully. It is a "one-coat" material, smooth and non-porous, and with very high adhesion. This lacquer is supplied in transparent and pigmented forms, and in a variety of colours. A very useful feature of the brochure is a key diagram on which the numbers of the different parts of the aircraft shown refer to the various sections of the brochure in which particulars of treatment are to be found. For each of the Titanine coatings available the Air Ministry Specification with which the coating complies is given, as well as the sizes of containers recommended and usually employed. For the benefit of more distant customers (and their number is growing rapidly) cable code names of the various preparations are also included.

Altogether it would be difficult to suggest any way in which this brochure could be improved for clearness and handiness, and all who are interested in the subject of protection against corrosion would do well to obtain it.



BRITISH AIRCRAFT IN SPAIN: As previously reported in "Flight," a Vickers "Vildebeest" torpedo carrier was recently delivered to the Spanish Government at Madrid—the first of an order of 26 machines. Our picture shows the machine at Madrid, when a successful demonstration was carried out by Mr. H. W. R. Banting.

Air Transport



A New Passenger Transport and Postal Plane

The Farman 250

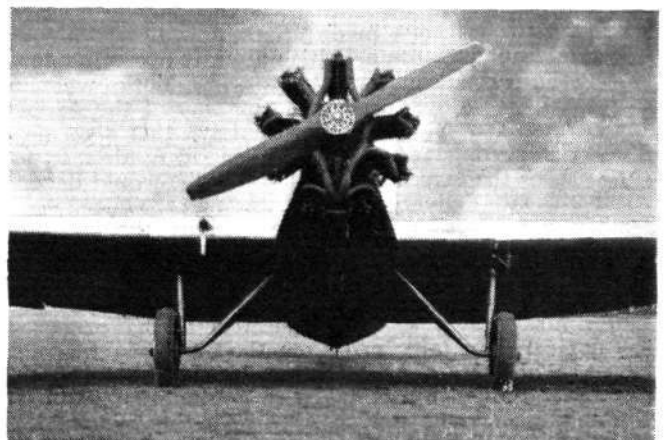
THE Farman Air Lines will shortly put in operation a new low-wing single-engine monoplane designed by Henry Farman for fast passenger and postal service. This plane, which is known as the 250, carries a pay load of some 560 kg. (1,235 lb.). It has accommodation for four passengers and there are compartments fore and aft for express matter or baggage.

Equipped with a Gnome and Rhone 380-h.p. "Jupiter" 9-cylinder air-cooled engine this machine has shown a ground speed of 250 k.p.h. (155 m.p.h.), with a cruising speed of 220 k.p.h. (136.7 m.p.h.). It was recently sent to Le Bourget to complete its 100-hr. service test, as required by the French authorities, before being allowed to carry passengers.

The plane is of wooden construction throughout. The wings, which are of the semi-thick type, have the customary Farman rectangular shape, with a comparatively large chord tapering slightly toward the tips. They consist of centre sections which form an integral part of the fuselage and to which the main wings are joined in cantilever fashion. The oleo-pneumatic shock absorbers of the landing gear are also joined to the underside of these centre sections and are further braced by a slanting strut running from the axles of each of the wheels to the bottom of the fuselage. The longerons and internal bracing of the wings are of wood while the wings themselves are covered with plywood. The ailerons are non-compensated. The fuselage and the *empennage* are of the same type of construction as the wings, and are covered with plywood.

The fuel tanks are installed in the two centre sections of the wings next to the fuselage and have a capacity of

Span	12,11 m. (39 ft. 9 in.)
O.A. length	10,5 m. (34 ft. 6 in.)
Height	2,88 m. (9 ft. 6 in.)
Wing area	31,74 m. ² (341.5 sq. ft.)
Weight empty	1,790 kg. (3,947 lb.)
Weight loaded	2,350 kg. (5,182 lb.)
Pay load	560 kg. (1,235 lb.)
Wing loading	74 kg./m. ² (15.17 lb./sq. ft.)
Power loading	6 kg./h.p. (13.2 lb./h.p.)
Take off	195 m. (640 ft.)
Max. speed	250 k.p.h. (155 m.p.h.)
Cruising speed (1,650 r.p.m.)	220 k.p.h. (136.7 m.p.h.)
Duration	6 hr.



THE FARMAN 250: The three views on this page show the clean lines of this new passenger and mail plane.

270 litres each (60 gall.). An auxiliary fuel tank, of 90 litres (20 gall.) capacity, is mounted in the fuselage, thus making a total fuel capacity 630 litres (140 gall.), which serves to give the plane a flight radius of somewhat over 6 hr. or about 1,300 km. (808 miles) at cruising speed.

The fuselage has the typical Farman flat sides and top giving a maximum amount of interior space. The cabin is lighted by six ports, three on each side. It has accommodation for four people, a broad upholstered bench suitable for two persons being installed in the forward part of the cabin and two arm chairs, which can be moved backward or forward, complete the seating equipment. The cabin can be heated by the exhaust gases from the motor and a special ventilator installed in the roof cools the air

in warm weather. Two compartments for carrying baggage or postal matter have been installed, one in the forward part of the fuselage just aft of the engine, and the other compartment aft of the cabin. The pilot's seat is placed on top of the fuselage just behind the cabin, from which excellent visibility is obtained.

The landing gear is of the split-axle type, fitted with oleo-pneumatic shock absorbers. It has a track of 3 metres (9 ft. 9 in.).

It is reported that this plane will be placed in operation on one of the long-distance routes of the Farman Lines, which extend from Paris to Brussels, Amsterdam and Berlin, as well as to Malmoe and Copenhagen in the Scandinavian countries.

R. C. W.

THE ARCTIC AIR ROUTE: A British Experiment

MR. J. D. M. GRAY, Managing Director of the Aviation Shop, 1184, Bay Street, Toronto, is—as already noted in FLIGHT—about to make an attempt to cross the Atlantic from east to west as a solo flight. Starting from London and stopping at Novar in the North of Scotland for meteorological reports, he will proceed to the Faroe Islands, Reykjavik, Tassiusak (Greenland), Godhavn (Greenland), across the Davis Strait to Pangnirtung (Baffin Island), Lake Harbour (Baffin Island), thence to a rendezvous with another machine to an advanced point to Lake Timagisac, Northern Quebec, thence to Ottawa, Toronto and New York.

The purpose of this flight is to corroborate and correlate the meteorological survey of this northern route to Canada and the U.S.A. made by the British Arctic Air Survey under Watkins' leadership and to prove the practicability of this route for the carriage of mails from England to the North American continent.

The advantages of the use of this route are that it forms an entirely new Empire link involving the carriage of mails by British aircraft to Northern Quebec, thence by feeder line to Quebec City and linking there with coast to coast air mails linking up Vancouver, and from there on British bottoms to the Orient.

The importance of this link in the Empire chain of communication cannot be overstated, as the only alternative suggestion that has been made up to now lies in a temporary agreement between a British aircraft operating company and Pan-American Airways to New York, whereby experimental flights are to be made by way of the Azores, Bermuda and New York. Unfortunately, this agreement involves the carriage of mails by American aircraft for 60 per cent. of the way, and Dominion mails would depend for their ultimate delivery on the U.S.A. Post Office.

Further, a concession has been agreed by the Icelandic Parliament to Trans-American Air Lines of the U.S.A., giving them landing rights at Reykjavik (Iceland) for 75 years—as we have already recorded in FLIGHT.

Should Mr. Gray's flight be successful, the necessary meteorological data (obtained from the air every 15 min.) will be available for the institution of a regular air mail service by the north route, taken in conjunction with the data obtainable by the British Arctic Air Survey, and the political significance of the flight will be enhanced by reason of the making available of this data in time for the Imperial Conference at Ottawa. In this connection it should

be noted that the concession in Iceland which the Americans have obtained becomes valueless unless the Dominion Government agree to the Americans the right to fly over Canada to the exclusion of British interests.

The aircraft to be employed in this pioneer flight will be a Comper "Swift" high-wing monoplane with a 75-h.p. Pobjoy "R" type engine. This machine has been deliberately selected in view of its high speed, viz., 118-120 miles per hour, its low consumption—4.4 gallons per hour, and its low landing speed—35-40 miles per hour; the possibilities of landing accidents are very much reduced by this low landing speed.

The pilot, Mr. Gray, took his first flying lessons in France in 1909, and again at Brooklands in 1911, and served with the R.F.C. He was instructor to the 86th Canadian Training Squadron and was sent to Fort Worth, Texas, to teach the Americans the English system of instruction. He has been flying continuously ever since, and has wide experience of snow-flying conditions in Northern Canada.

In preparation for this flight he has taken the C.F.S. blind-flying course at Hamble, together with the latest advanced instruction in C.F.S. flying technique at the same school. Skis and wheels will be used in this attempt, and the aircraft is fitted with complete blind-flying equipment.

All meteorological data and the records of every flight made in the Arctic has been studied and a serious effort has been made to plan and organise this flight upon a sound and scientific basis. The ground organisation is in the hands of one of the largest petrol groups operating in England and Canada.

It may be of interest to note here that the negotiations between the Trans-American Airline Corporation and Pan-American Airways on the one hand and the Danish Government on the other about a concession for an air service between America and Europe via Greenland, referred to above, were concluded on April 26. The Government has given the companies permission to examine meteorological conditions in Greenland. If their investigations lead to a satisfactory result they will be allowed two years of trial flights, and if these succeed the Danish Government is willing to grant the concession for the establishment of the airline.

Speeding up Canadian Mails

A REGULAR liner-air mail service for Canada was inaugurated on April 16 when the Canadian Pacific liner *Empress of Australia* left Southampton for Quebec with mails for discharge at Father Point, some hundreds of miles down the St. Lawrence. From there they were flown to Montreal and points farther west. The new service will save one day for mails sent to Montreal, Ottawa and Toronto, and two days for mails to Winnipeg and beyond.

London-Capetown Airline Opened for Passenger Traffic

WITH the departure of the weekly African air mail from Croydon on April 27, the entire 8,000 miles route from Britain right through to the Cape was opened for passengers as well as for mails and parcels. Hitherto, since the inauguration of this London-Capetown route on January 20 last, passengers have only been carried from London as far as Nairobi. The first through passenger

carrying service from Cape Town to London also left Cape Town on April 27. The air fare from London to Cape Town will be £130, which includes all meals, hotel accommodation, and tips *en route*, and the aerial journey will be accomplished in 11 days as compared with approximately 17 days by surface transport. Already many passenger bookings for the through air services have been made.

New Basra-Aden Route

LANDPLANES and flying-boats of the Royal Air Force are engaged, says a correspondent of *Lloyd's List*, on the survey and development of an air route along the shores of Arabia between Basra and Aden. Some landing grounds have been chosen and stocks of fuel laid down. The sites so far approved are Khor Jaramah, Ras el Hadd, Masira Island, Mirbat, Salalah, and Mukalla. When developed, this route will make a new way for air communications and reinforcements between Iraq, India, Aden, and the Sudan.

Airism from the Four Winds

Maybach Engines for U.S. Airship

AN order for eight 550-h.p. engines has been placed by the Goodyear Zeppelin Corp. of Akron, with the Maybach Engineering Works at Friedrichshafen for the new rigid airship, similar to the *Akron*, now under construction.

The "Graf Zeppelin" Atlantic Ferry

THE German airship *Graf Zeppelin*, which left Friedrichshafen on April 17, with Sqd. Ldr. R. S. Booth among the passengers, for Brazil, arrived there on April 20. The airship left Pernambuco on April 22 and arrived back at Friedrichshafen, completing the third of this season's round trips to Brazil, on April 27. On May 2 the airship again set out from Friedrichshafen. There seems to be some confusion regarding the number of Atlantic crossings accomplished by the *Graf Zeppelin*, and so we have endeavoured to trace back her previous wanderings to and fro with the following result:—From Friedrichshafen to New York: Two, October 11, 1928, August 1, 1929. From New York to Friedrichshafen: Four, October 29, 1928, August 8, 1929, September 1, 1929 (World flight), June 2, 1930 (from Brazil). From Friedrichshafen to Brazil: Seven, May 18, 1930, August 29, 1931, September 18, 1931, October 17, 1931, March 21, 1932, April 5, 1932, April 17, 1932. Brazil to Friedrichshafen: Six, September 4, 1931, September 26, 1931, October 24, 1931, March 26, 1932, April 9, 1932, April 22, 1932. This makes six crossings across the North Atlantic, and 13 across the South Atlantic, or 19 crossings in all.

Do.X to Cross the Atlantic

THE large German Dornier flying-boat *Do.X* is, it is reported, to make a flight across the Atlantic this month, and Capt. Meimann is at present in Newfoundland looking for a suitable base.

Ex-King Alfonso Flies to Malta

EX-KING ALFONSO OF SPAIN flew to Malta last week on a visit to Lord Louis Mountbatten, who is with the Mediterranean Fleet.

The "Flying Carpet"

It may be remembered that in February last year two American airmen, Richard Halliburton and Moye Stephens, came to England from California with a Stearman Speedmail biplane with a view to carrying out a world tour lasting some two years or so. We are indebted to Shell Mex & B.P., Ltd., for the following particulars of the wanderings of the these two which may be of interest.

After making arrangements with Shell in London, Mr. Halliburton flew to Paris on February 21, 1931. In Paris he obtained his permits, etc., and then continued through

Spain to Algeria. A flight was made across the desert to Timbuctoo. On arrival at Timbuctoo on April 28 he sent a telegram to Shell in London as follows:—"Airplane *Flying Carpet* with Halliburton and Stephens reached Timbuctoo flew 2,000 miles across middle Sahara Shell Gasoline." From Timbuctoo he and Mr. Stephens returned to Sidibel-Abbes where they "unofficially joined the 'Foreign Legion.'" They spent about two months there and returned through Portugal to Paris in August, 1931. From there they flew over the Alps to Venice and then turned north and "followed the route of the Crusades" to Istanbul, Damascus and Jerusalem, continuing later to Cairo. In October the flight was continued to Baghdad, Teheran, Shiraz and Bushire. It was at Bushire that Mr. Moye Stephens assisted in a search for the missing German pilot, Fraulein Elli Beinhorn, and brought her back when found. After leaving Bushire, they continued down the Persian Gulf across India, down the coast of Burmah and the Malay Peninsula to Singapore, where they arrived on January 18, 1932. Thus the features of the flight so far have been: (1) Flight to Timbuctoo; (2) a flight over the Matterhorn which Mr. Halliburton had climbed 10 years previously; (3) a flight over the Taj Mahal, of which superb photographs were obtained; (4) a flight round Mount Everest at a height of 18,000 ft. on which the first aerial photographs ever taken of Mount Everest were obtained. (These, however, did not come out well owing to vibration.) There are also a number of other interesting details of this flight, though they relate rather to the experiences of Mr. Halliburton and Mr. Stephens than to the achievements of their Speedmail Stearman machine. Amongst these may be mentioned:—(a) The two months spent in the Foreign Legion at Sidibel-Abbes as members of the Legion. (b) Mr. Halliburton's swimming of the Sea of Galilee. (In America Mr. Halliburton is well known as a long-distance swimmer, having swum through the Panama Canal and also having swum the Hellespont.) (c) When in Persia Messrs. Halliburton and Stephens took up two Persian Princesses for their first flight. (d) When in Mesopotamia they took up the Crown Prince of Iraq for his first flight. (e) As mentioned above, Mr. Moye Stephens took part in the successful search for the German pilot, Fraulein Elli Beinhorn, who was reported missing when flying between Basra and Bushire.

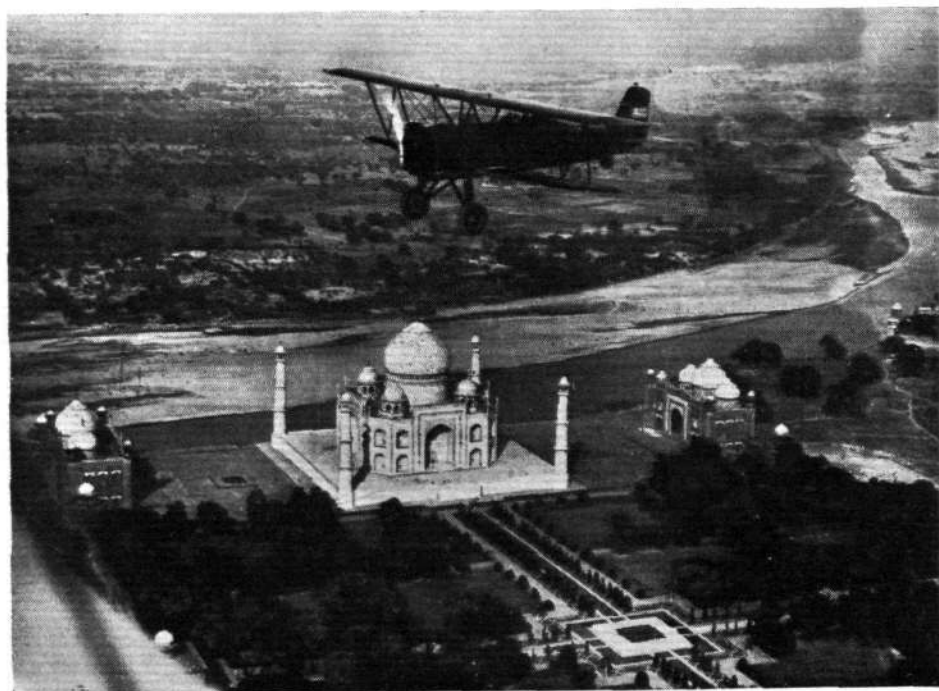
The latest news of the two airmen is that they flew from Zamboanga to Cebu, in the Philippine Islands, on April 25 last. The accompanying illustration shows their machine flying over the Taj Mahal.

A Forthcoming Atlantic Flight

MR. LOU REICHERS, a pilot for Bernarr MacFadden, publishers, is planning a 14-hr. Transatlantic flight from New York to Paris via Harbour Grace and Baldonnell, starting—weather permitting—on May 8. He will be flying a Lockheed "Altaire," with Wright "Cyclone" engine, and after his arrival in Paris he intends to undertake a number of fast flights to European capitals such as London, Berlin, Rome, etc. He will be using special Shell spirit and oil, and the registration number of his machine is N.R. 998 Y.

Further King's Cup Entries

THE following additional entries have been received for the King's Cup Air Race, which will be flown on July 8-9:—I. C. MacGilchrist, Comper "Swift" ("Gipsy III"), pilot A. J. Styran or S. St. Barbe; Robert McAlpine, Blackburn B.2 Trainer ("Gipsy III"), pilot T. N. Stack; G. H. Keat, Avro "Avian" ("Hermes II"). The following have withdrawn their entries:—A. S. Butler and L. C. Anderson.



THE "FLYING CARPET": Richard Halliburton and Moye Stephens, who are on a World Tour, flying over the Taj Mahal.

The Industry

SURVEYS, LTD.

THE need for large-scale maps has become of increasing importance during the last few years owing to the rapid extension of building schemes and other projects, and to meet this need Surveys, Ltd., have been formed, with their drawing and technical office at Midland Bank Chambers, Wellington Street, Aldershot, and their head office at 12, St. James's Place, London, S.W.1.

The survey methods used in the production of such maps will for the main part be the same as those which are normally used on the ground, but aerial photography will be employed to supplement the ground methods when the conditions are suitable.

This company is prepared to undertake surveys of any kind whatsoever, but is in particular specialising in large-scale work, even up to 1/500 (126.72 in. to the mile), a scale which is of particular use to municipalities and other bodies who use plans from which they wish to take accurate measurements.

Naturally, the choice of a suitable scale is a matter on which considerable experience is required, and in this, as in any other matters connected with survey work, the company is prepared to advise.

Anyone who is interested in survey work should write to the head office, mentioning FLIGHT, and they will be sent a very descriptive pamphlet fully describing the activities of the company.

PRODUCING OXYGEN GAS

WELEDGED joints were regarded with official disapproval for some time after the change-over to metal aircraft construction was effected, but it is now, of course, an ordinary method of joining principal members, the practice having justified itself to the satisfaction of most experts in the aircraft industry. This consequently makes the subject of commercial oxygen relevant in our columns. Much of the history of commercial oxygen is bound up with the development of the British Oxygen Co., Ltd., Victoria Station House, S.W.1, who supply the aircraft industry with large numbers of cylinders of oxygen.

The production of oxygen for commercial purposes in this country was first begun by them fifty years ago in the Westminster district of London, and we believe that they have been the pioneers in the establishment of oxygen plants in many of the great cities of the world, Paris, Berlin, New York, etc. Before 1886 oxygen had been used mainly for limelights and for medical purposes. To-day the supply absorbed by medical practice is not 40 per cent. of the oxygen produced, cutting and welding by the engineering industry taking well over 60 per cent.

The process by which commercial oxygen is obtained from the air is known as the Linde Rectification Process. Air is first sucked into the plant by compressors, being compressed until it is under a pressure of no less than 3,500 lb. per sq. in. After compression there is an inevitable process of expansion, by the aid of an expansion engine connected to the plant, in the course of which the great lowering of the temperature occasioned by the change turns the oxygen into liquid. In this liquid state it can be drawn off and used for operations like blasting, and in mines when the air has been poisoned, but for producing gas as required for welding and cutting the rectification process is continued until the liquid is turned into gas. In the next stage of the process the liquid becomes separated into two mixtures, one rich and the other poor, each composed of certain proportions of oxygen and nitrogen.

This nitrogen is allowed to go to waste, as it has no industrial use. The oxygen then passes through very narrow copper tubes in the rectification column of the plant, and finally through capillary trays or foam plates, composed of thin copper ribbon, in this same column, from which it emerges as the pure oxygen gas.

To summarise this Linde process, one may refer to the meanings of the word "rectification," namely, to exchange for what is right, to refine, to purify.

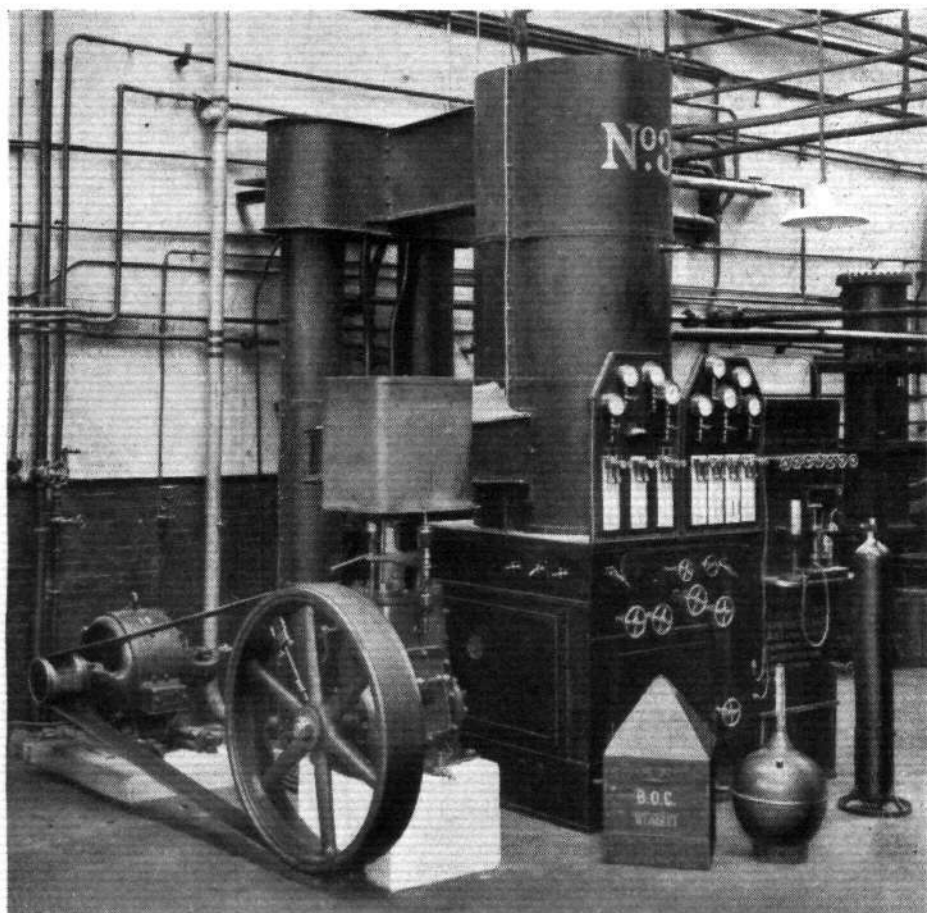
For supplying the oxygen to customers it is contained, of course, in weldless steel cylinders.

The British Oxygen Co., Ltd., incorporated Allen-Liversidge, Ltd., in 1930, which represented an oxy-acetylene amalgamation of two leading concerns in the industry and avoided wasteful overlapping competition. In addition to the production of oxygen gas for commercial use, the company manufactures a wide range of producing plants, compressors, cutting machines, welding blowpipes, gas liquefiers, and high-pressure gas valves.

They supply the compressed oxygen for the Siebe, Gorman Company's breathing apparatus for high altitude flying. Liquid oxygen is also used for this purpose, the airman's apparatus in this case including a vaporiser for turning the liquid gas into oxygen gas. The capacity of the vacuum vessel carried is 3 litres of liquid oxygen, which is sufficient to last a pilot and observer six hours, assuming they use an average of 3 litres of oxygen gas per minute. Apparatus used by an airman flying solo includes a 2-litre capacity vessel which provides an 8-hour supply.

FOR HANGAR ROOFS

REGARDING the paragraph in FLIGHT for April 29, page 373, on the subject of assisting pilots by painting hangar roofs yellow, we have received the following letter from Cellon, Ltd., Upper Ham Road, Kingston-on-Thames:—"We notice with great interest your remarks in last week's issue regarding the painting of aerodrome buildings a yellow colour. For a long time we have felt



The Rectification Column and Expansion Engine for producing Oxygen Gas.

that this is the desirable colour for aerodrome buildings, as it shows up in bad weather, and we have a special "Cerric" synthetic protective material available for this purpose. This material is applied by brush in the form of a paint and gives the most durable protective coating possible to roofs and walls. We shall be pleased to send samples to any aerodrome proprietors who are interested."

THE "SECOND-HAND" TRADE

TRADE in second-hand aircraft is keeping what must be considered a very satisfactory steady level, and the number of private owners purchasing new aircraft is on the increase. For example, during the month of March the firm of Brian Lewis & Co., Ltd., of 30, Conduit Street, London, W.1 (Mayfair 7028/9), have sold no less than 12 aircraft, of which four were new. These sales included Comper "Swifts" (3), "Avians" (2), "Puss Moths" (4), and "Moths" (3), while during April a similar number of machines was sold, including "Puss Moths" (5), Comper "Swifts" (2), "Fox Moth" (1), "Moths" (3), "Avian" (1). A volume of trade of this nature cannot be considered other than gratifying when the prevailing pessimism is taken into account, and would point to the fact that the aircraft business is continuing its progress in spite of the depressing influence of many other trades at the present time.

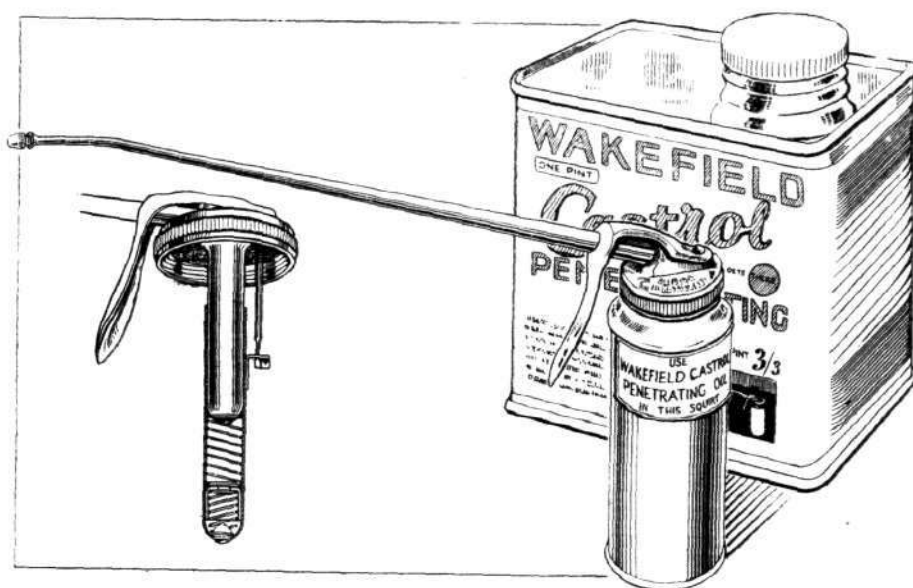
PREVENTING CORROSION

CADMIUM and Anodic treatment to prevent corrosion became an important process in manufacture when metal construction usurped wooden construction in the aircraft industry. Cadmium was the 1817 discovery of Stomeyer, who separated it from crude zinc carbonate and named the new metal "Cadmia Fornacum," because it was generally found in the zinc flowers of the furnace.

As a rust preventive, Cadmium is denser than its rival, zinc, and consequently as an electro deposit it is more compact. An equal thickness of Cadmium is attained in a shorter time with an equal current, so the process saves on labour and current consumption.

The principal advantage of Cadmium is the property of alloying with iron or steel in the cold, and this Cadmium alloy is very resistant to atmospheric corrosion; thus the underlying base metal is protected. Complete equipment for Cadmium plating is manufactured by W. Canning & Co., Ltd., of Birmingham. They market "Zonax" Cadmium Salts as a suitable solution for the process of plating, which are merely dissolved in water to produce a solution correctly balanced, self-maintaining and easy in operation. The recommended solution is 12 oz. of "Zonax" with 1 gallon of water, which works cold with a current density of 15 amps. per sq. ft. at a pressure of 2-2½ volts.

The plating equipment consists of a bath—an iron vat—a supply of "Zonax" and of Cadmium Anodes, the latter being in the form of balls



With this equipment Castrol Penetrating Oil can be got into awkward places.

held in a steel cage and lowered in the bath. As the balls dissolve, new ones are added, without raising the cage out. There must be a supply of electricity connected with a control.

Simple means are provided to test the thickness of the deposit obtained in the bath, the metallic content and "free cyanide" content. Such tests, easily carried out by any intelligent workman, ensure that the bath is kept in perfect working order.

Cadmium is not suitable for non-ferrous metals like brass and copper. When the metal part is dipped in the bath, it emerges covered with an attractive satin deposit, which is electro-positive to iron and therefore rustless.

Incidentally, it is calculated that 2 per cent. of the world's production of iron and steel is entirely destroyed annually by corrosion, otherwise the burning up of the ferrous metal by its combination with the oxygen of the air. Cadmium-plated articles remain rustless even if scratched or abraded.

When Cadmium plating on aluminium is required, Cadmium Potassium Cyanide is necessary for the solution. It is dissolved in water with the addition of liquid ammonia and dextrine.

SMOKE WIND INDICATOR AT CROYDON

NATIONAL Flying Services, Ltd., have received an order from the Air Ministry for two smoke wind indicators. One is to be used at Croydon Aerodrome and the other at Cranwell. It will be remembered that this Ahrens type of smoke wind indicator, for which N.F.S. have the agency, was described in FLIGHT for June 5, 1931, and was installed at their London Air Park, Hanworth, over a year ago, since which time it has given complete satisfaction.

A PENETRATING OIL

A NEW OIL which has been marketed by Wakefield is their Castrol Penetrating Oil. Its primary use is for the lubrication of spring leaves, and to facilitate its application for this purpose a handy, small, pressure squirt has been designed

specially for it. Both aircraft and car users will, however, find a multitude of other uses for such an oil, since it has the propensity for creeping into places where an ordinary oil will not penetrate. By its aid rusted bolts and nuts may readily be loosened, while body and chassis squeaks can easily be cured by its use.

AGENTS FOR D. LEWIS

E. PELGER, of Prinsestratt 3335, Den Haag, has been appointed the sole agent for Holland and the Dutch Colonies for D. Lewis, Ltd., 124, Gt. Portland Street, London, W.1, the well-known suppliers of aviation clothing and general equipment.

SMITHS' AIRCRAFT INSTRUMENTS

ONE of the most interesting catalogues we have seen is the newly-compiled French catalogue "C" which has been produced by Smiths' Aircraft Instruments, 185, Great Portland Street, London, W.1. This volume is intended to be used not only for France, but for all other countries where French is the diplomatic language. It is extremely comprehensive in its scope and fully covers every type of instrument which is likely to be required on an aircraft, whether it be for navigational or engineering purposes. Full details are given of such particular accessories as oxygen equipment, sextants, drift sights, course and distance calculators, etc.

A NEW FINISH

MANUFACTURERS of commercial aircraft are at last realising that an attractive finish goes a very long way towards making sales to private individuals. Two of the most beautiful of these which we have seen are now prepared by John Hall & Sons, Broadmead, Bristol. These are "Soft Lustre" and "Star Dust" effects, which are obtainable in blue, green, plum and rose colour; both may have a semi-matt velvet surface or a full gloss.

THE SEVENTH SUCCESS

WHAT will happen if the present tendency in A.I.D. Technical Staff Association Annual Dinners is continued can be forecast with reasonable accuracy from the data of the dinners held so far. At the first of these dinners 195 people were present, of whom 155 were members of the Association and 40 were guests. At the annual dinner held last Friday in the King's Hall of the Holborn Restaurant the total number had increased to 421, which shows the increasing popularity of the A.I.D., T.S.A. Annual Dinners. But the disquieting feature is that this total was composed of 134 members and 287 guests. Even without a slide rule it is possible to estimate that in a very few years, at this rate, the A.I.D., T.S.A. Annual Dinner will be attended by Mr. J. J. A. Gilmore and 1,000 guests! Not that one supposes Mr. Gilmore would be embarrassed by being the only T.S.A. representative, or by being host to 1,000 guests, but unless the Central Hall, Westminster, is taken for the occasion, Mr. Jack Jarvis is going to be "up against it" even more than he is now.

After a very excellent dinner, the company listened with delight to a speech by Lt.-Col. J. T. C. Moore-Brabazon, M.C., M.P., who proposed the toast of the A.I.D. "Moore-Brab." as he is affectionately called, said he did not know why he had been chosen to propose the toast of the A.I.D. He was a complete outsider. It so happened that he *could* have been in the aircraft industry, and in that case he *would* by now, he said, have been either a millionaire or a pauper. It seemed to him that in the aviation world there was no middle class. He was not even a Civil Servant. He was a Public Servant, as Member of Parliament, but as he lacked stability, he did not nowadays fly. Flying was noisy, draughty and dangerous.

The A.I.D., Col. Moore-Brabazon said, came into being during the stress of war. When the call for aeroplanes and engines became insistent, a lot of firms which had been making soap boxes decided to make aeroplanes, and a lot of firms which had been making collar-studs became aero engine constructors. That necessitated inspection, and the A.I.D. was formed. "We have never," Col. Moore-Brabazon said, "been able to get rid of you since." The result had been that the aircraft industry of to-day had imposed upon it a Government parasitic organisation. Yet, on that evening one saw the extraordinary sight of the lamb lying down with the lion and feeding out of the same trough quite amicably. That was typically British. The system worked well in this country, but would be unthinkable in any other. The A.I.D. shared with other civil and public servants, the fate of being looked upon, be he chancellor or postman, with pity and commiseration! Some day, sooner or later, he thought, the same thing would happen as had taken place with other forms of transport and the work of the A.I.D. would pass to the insurance companies. But at present the A.I.D. was still with us; grim thought!

In more serious vein, Col. Moore-Brabazon said that the work and influence of the A.I.D. had been for good. It had made the British industry make a product which stood alone in the world. What he particularly liked was the spirit in which the A.I.D. carried out its work. In spite of endless opportunities of doing so, the inspectors had never wielded the big stick. The organisation was doing great work, and the country owed it a great debt of gratitude.

Lt.-Col. H. W. S. Outram, Director of Aeronautical Inspection, in replying to the toast, said that on previous occasions he had been able to get out of making a long speech on the plea that at the meeting held earlier in the day he had already said all he wanted to say to his inspectors. This year, as the usual meeting had not taken place, he had not that excuse and would be obliged to speak of certain A.I.D. matters which he hoped would not bore the guests. He regretted that for the first time since 1921 there was a reduction in the number of the personnel of the A.I.D. (510). That was a result of the general conditions obtaining. A note of sadness had to be introduced in referring to the passing of a few members of the A.I.D., who had been in the service since the beginning, and the fact had to be faced that as the years went by more and more of the older hands would pass out as a result of *anno domini*. This meant that they would have seriously to consider a training scheme by which new blood could be instructed in the work.

He was sorry to say that during the past year the A.I.D. had not had quite such a clean record as previously. It was true that not a single accident to a service aircraft had been due to A.I.D. negligence, but during the year there were three civil accidents in which the ground engineers had been to blame.

At the aircraft constructors' works the change from wood to metal was now practically completed, and it was now quite strange to see wood in an aircraft. The change-over had not been without difficulties, but had been completed satisfactorily. Something of a new problem arose when one contractor manufactured machines designed by another manufacturer, but the scheme, which presented considerable difficulties, had, on the whole, worked smoothly.

Certain figures were quoted to show the work of the A.I.D. during the past year. This time last year, 353 certificates were renewed. The corresponding figure this year was 540. Many of the inspections had been carried out by Lloyds and the British Aviation Insurance Co. Ltd.; 232 ground engineers' licences had been issued, and the total number was now 749. This did not mean that all those ground engineers were actually working, but they held the licence.

Referring to the number of small firms that had come, or were about to come into being, Col. Outram said that hitherto there had been no trouble, but they had to see that in future the present high standard was maintained. Col. Outram then referred briefly to the setting up of a Certificate of Airworthiness Committee on which the industry was represented. On the engine side, there had been a very gratifying increase in the average number of hours between overhauls, and this was the greatest tribute that could be paid to the efficiency of the inspection. The number of approved firms in the industry was now 27, and some idea of the magnitude of the work done could be formed from the fact that 33,000 release notes were issued during the first quarter of 1932.

Col. Outram said he would have to conclude with a piece of information which might not be welcomed by everybody. It would be necessary to make a reduction in numbers this year. While feeling sorry for those who would have to go, he was rather glad of this because it gave an opportunity to raise the standard by retaining only the best men. The "spring cleaning"

would, of course, be unpleasant for the individuals concerned, but, on the whole, it would be for the good of the A.I.D.

Mr. J. J. A. Gilmore who was in the chair, proposed the toast of the guests. He would, he said, thank Col. Moore-Brabazon for his remarks, but he would not thank him very much. The few kind things said about the A.I.D. were well deserved, and the others—well, they were to be expected. He was very glad to see there that evening two members of the Air Council: Air Vice-Marshal H. C. T. Dowling, C.B., C.M.G., Air Member for Supply and Research, and Mr. C. L. Bullock, C.B., C.B.E., Secretary of the Air Ministry. Air Vice-Marshal Dowling, as they all knew, dealt with contractors whose feelings had been outraged by A.I.D. decisions, and it was up to the A.I.D. to see to it that Air Vice-Marshal Dowling had nothing to do! He was very glad that they were able to organise these annual dinners where, as Col. Moore-Brabazon had said, the contractor lions could lie down with the A.I.D. lambs!

Mr. Bullock, as they probably knew, had taken high classical scholarships. In addition he was the first to occupy the post of Secretary who was also a pilot in the R.A.F. That was all to the good. Although he was not sure that being a pilot was an essential qualification, it should enable Mr. Bullock to descend from Latin verse to earth without crashing.

After what he had said he thought the rest of the guests might be glad to know that he was not going to refer to them individually. He would make one exception, however, in the case of Sir Henry McAnally. Sir Henry had, he said, been present at all seven annual dinners, and it was now a neck-and-neck race between him and Mr. Gilmore. He hoped Sir Henry would attend very many dinners to come. Several Treasury officials had been invited, but as he did not see them, he thought they had considered discretion the better part of valour.

During a recent visit to Germany he met, at one of the German aircraft works, a representative of the D.V.L., and told him how very obliging the firm had been in showing him everything. The German official said that that was quite natural, but that he had just been told he was a d... nuisance. "Now, in England," the German official said, "it would be just the reverse. I should be shown everything, and you would be the nuisance." From this, Mr. Gilmore had formed the opinion that an inspector was not without honour except in his own country. Perhaps he should have said that a distant inspector always looked green!

In replying to the toast, Mr. Bullock said he did not feel at all qualified to speak after such an old parliamentary hand as Lt.-Col. Moore-Brabazon, who was experienced not only in speaking, but in aviation. In 1909 he showed that he had nerve by flying, at a time when flying needed nerve, when one recollected that there was then no A.I.D. to give that guarantee of safety which they had nowadays. It had, Mr. Bullock said, been his lot to undergo the buffeting of examinations, first by schoolmasters, then by professors, and later by Civil Service Commissioners. He was glad, however, that he had not had to be examined by the A.I.D. He would like to emphasise his realisation of the importance of the A.I.D. and its work, and his appreciation of the quiet effectiveness with which the A.I.D. did its duty. The A.I.D. was one of the most valuable assets of the Air Ministry, and he felt sure that in the future they would enhance the reputation already established.

Mr. Bullock said he would very much like to, although he was not going to, have an argument with Col. Moore-Brabazon, who had referred to the A.I.D. as a Government parasitic organisation. He would like an argument about whether or not Parliament was a parasite on the body politic. He would also like to point out that Col. Moore-Brabazon was somewhat ill-informed on the matter of inspection passing to insurance companies. The Mercantile Marine was very far from having done away with Board of Trade inspectors, and he did not think the A.I.D. people need fear.

Sir Robert McLean, Chairman of Vickers, Ltd., referred humorously to the A.I.D. as representing the police, while the constructors were the criminals. Then a certain number of convicts were made warders, and they got the "approved firms" system. In all seriousness, however, there was no body of men for whom the industry had a greater admiration, and the A.I.D. always helped the contractors as far as they possibly could. As an instance of the devotion to duty shown by A.I.D. representatives, he quoted the case of the Schneider Trophy Contest, when they had found that Mr. Speller and Mr. Ransome were available night and day.

Last year, Mr. Fairey had replied on behalf of the contractors, and had referred to the drawing in his house magazine which depicted an inspector being refused admittance to Heaven because his wings had not been passed by the A.I.D. He (Sir Robert) thought the artist had looked even deeper than Mr. Fairey realised, and was uttering a warning as to what would happen if the Government decided to make aircraft, and do their own inspection. While fully realising the value of the high standard which had been set by the British system of inspection, he would like to point out that the foreigner was willing to pay for some inspection, but not for so much.

Mr. J. D. Siddeley, C.B.E., head of the Armstrong-Whitworth and Armstrong Siddeley companies and allied firms, said it was a surprise to him to learn from Lt.-Col. Moore-Brabazon that the aircraft constructors were either paupers or millionaires. He personally did not come into either class. As one who had been connected with the A.I.D. and its work since the beginning, he would like to say how much the industry owed to them by being made to take care and thus improve their products. If he remembered correctly, his firm did not make soap boxes before they took up aircraft work, and he was quite sure they could not have made collar-studs. The life in those early days was strenuous, and sometimes the inspection irked. He recollected making complaints, and was asked if he would like another inspector sent. On thinking things over, he thought he *wou* not. It was a case of the devil you knew against the one you did not know.

He thought the high standard demanded gave the inspectors very valuable experience, but reminded them that if the firms did not get orders the A.I.D. would, presumably, not exist. He could, he said, think of no better career for a young man than joining the A.I.D., and recalled several instances of members of the A.I.D. staff having been able to qualify for posts elsewhere.

Mr. J. B. Abraham proposed a vote of thanks to Mr. Jack Jarvis and those who helped him organise the dinner, and Mr. Jarvis replied by saying that the few who might feel themselves a little badly placed might remember that what he was faced with was getting 400 people into 200 chairs. He had asked the Handley Page stress department to get out some special seats, but the work of stressing had proved too much for them in the time available.

During the evening, entertainments were provided by Jack Rickards and Winifred Dunk, by Gordon Marsh and his "Marshmallows," and by "Stainless Stephen." The latter seemed to have made enquiries about everyone of note present (or else is an unsuspectingly careful reader of *Flight*), and managed to get in digs and quips almost innumerable. The company seemed to like particularly the reference to Col. Outram as a great inventor and the designer of a new wheelbarrow for the A.I.D., the feature of which was that it had four handles, to enable "two men to do the work of one."

THE ROYAL AIR FORCE

London Gazette, April 26, 1932

General Duties Branch

The follg. Pilot Officers on probation are confirmed in rank:—C. M. H. Outram (March 22); C. J. Giles (April 8); D. L. Dustin, W. N. Elwy-Jones (April 10). The follg. Pilot Officers are promoted to rank of Flying Officer:—D. G. Singleton (April 10); G. F. A. Skelton (April 12). Group Captain I. T. Courtney, C.B.E., is placed on retired list at his own request (April 1).

Stores Branch

The follg. Warrant Officers, Class I, are granted permanent commns. as Flying Officers on probation with effect from and with seny. of April 19:—579 T. E. Guttery, 228400 W. Macey, 1382 G. G. N. Marshall, M.B.E., 364 G. Thornton, M.M., 3900 G. R. Thwaite. Flying Officer on probation J. E. Atkins is confirmed in rank (April 13).

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified:—

General Duties Branch

Wing Commanders: E. L. Tomkinson, D.S.O., A.F.C., to Station H.Q., Andover, 15.4.32, to Command vice Wing Com. W. B. Hargrave, O.B.E. C. H. Elliott-Smith to H.Q., Inland Area, Stanmore, 22.4.32, for personnel staff duties vice Wing Com. A. N. Gallehawk, A.F.C.

Squadron Leaders: E. A. Fawcus, to No. 99 (B) Sqdn., Upper Heyford; 15.4.32. F. H. Laurence, to R.A.F. Depot, Uxbridge, 18.4.32, whilst attending course at Senior Officers' School, Sheerness. P. L. Plant, to R.A.F. Depot, Uxbridge, 18.4.32, whilst attending course at Sen. Officers' School, Sheerness.

Flight Lieutenants: V. E. Groom, D.F.C., to H.Q., R.A.F., New Delhi, India; 24.3.32. N. L. Desoer, to No. 28 (AC) Sqdn., Ambala, India; 26.3.32. C. B. Riddle, to No. 99 (B) Sqdn., Upper Heyford; 15.4.32. E. J. Kingston-McCloughry, D.S.O., D.F.C., to No. 20 (AC) Sqdn., Peshawar, India; 24.3.32. F. G. Brockman, to Air Ministry (D. of T.); 9.4.32. C. Hallawell, to No. 2 Armament Training Camp, North Coates Fitties; 29.2.32. T. Humble, to Station H.Q., Hinaidi, Iraq; 19.3.32. A. F. James, to H.Q., Coastal Area, Lee-on-Solent; 21.4.32. W. J. H. Lindley, to No. 5 Flying Training School, Sealand; 19.4.32. C. N. H. Binley, to No. 1 Armament Training Camp, Catfoss; 5.3.32. A. F. Scroggs, to No. 32 (F) Sqdn., Kenley; 22.4.32. F. G. Jennings, to R.A.F. Base, Gosport; 7.4.32. P. W. Lowe-Holmes, to No. 1 Armament Training Camp, Catfoss; 6.3.32.

Flying Officers: A. C. Richardson, to No. 27 (B) Sqdn., Kohat, India; 26.3.32. R. A. T. Stowell, to No. 2 Flying Training School, Digby; 17.4.32. J. S. Dewar, to No. 2 Flying Training School, Digby; 17.4.32. J. G. Llewellyn, to No. 3 Flying Training School, Grantham; 17.4.32. D. H. F. Barnett, to No. 5 Flying Training School, Sealand; 17.4.32. R. H. Cave Penney, to No. 10 (B) Sqdn., Boscombe Down; 6.4.32. H. V. Satterly, to No. 2 Flying Training School, Digby; 17.4.32. The following Flying Officers are posted to Air Armament School, Eastchurch, on 29.2.32:—C. E. St. J. Beamish, A. E. Dark, J. W. Homer, E. C. Hudleston, and C. M. Champion de Crespigny.

Pilot Officers: D. Addenbrooke, to No. 60 (B) Sqdn., Kohat, India; 15.3.32. D. Prowse, to No. 3 (F) Sqdn., Upavon; 18.4.32. D. Sloan, to No. 84 (B) Sqdn., Shaibah, Iraq; 4.4.32. H. D. Parsons-Smith, to No. 4 Flying Training School, Abu Sueir, Egypt; 28.3.32. On appointment to a short-service commn. as a Pilot Officer (on probation).

Acting Pilot Officers: The following Acting Pilot Officers are posted to No. 3 Flying Training School, Grantham, on 16.4.32:—W. D. Anderson,

ROYAL AIR FORCE RESERVE RESERVE OF AIR FORCE OFFICERS

General Duties Branch

Flight Lieut. G. W. H. Wallcousins is granted a commn. in Class C, in his present rank, on relinquishing his commn. in Auxiliary Air Force (Aug. 3, 1931). (Substituted for *Gazette* Feb. 9.) Flight Lieut. S. L. H. Potter is transferred from Class C to Class A (April 6). Flying Officer G. M. Randall is transferred from Class AA (ii) to Class C (April 14). *Gazette* April 12 concerning Pilot Officer W. B. Thompson is cancelled.

AUXILIARY AIR FORCE

General Duties Branch

No. 604 (COUNTY OF MIDDLESEX) (BOMBER) SQUADRON.—The follg. Pilot Officers are promoted to rank of Flying Officer:—J. Cherry (Feb. 19); C. D. Griffiths (March 29).

Stores Branch

Flying Officers: B. Allen, to No. 31 (AC) Sqdn., Quetta, India; 31.3.32. The following Flying Officers are posted to Home Aircraft Depot, Henlow, on 19.4.32, on appointment to Permanent Commns. as Flying Officers (on probation):—G. G. N. Marshall, G. Thornton, W. Macey, G. R. Thwaite, T. E. Guttery.

Accountants Branch

Flight Lieutenant B. G. Drake, to R.A.F. Base, Gosport; 24.4.32. **Flying Officer** W. F. Quilliam, to R.A.F. Depot, Middle East, Aboukir; 8.4.32.

Medical Branch

Flight Lieutenants: D. A. Wilson, to R.A.F. Training Base, Leuchars; 26.4.32. E. E. Isaac, M.C., (Hon. Sqd. Ldr.) to Aeroplane and Armament Experimental Estab., Martlesham Heath; 19.4.32. R. E. Alderson, to H.Q., Air Defence of Great Britain, Uxbridge; 25.4.32.

Flying Officers: E. A. Gudgeon, to R.A.F. Gen. Hospital, Iraq, Hinaidi; 23.3.32. O. M. Fraser, to R.A.F. Gen. Hospital, Iraq, Hinaidi; 23.3.32. V. H. Tompkins, to Med. Training Depot, Halton; 18.4.32. The undermentioned Flying Officers are posted to Med. Training Depot, Halton, on 18.4.32 on appointment to a Short-Service Commn.:—T. A. Hunt, H. J. Melville, and O. S. M. Williams.

Dental Branch

Flying Officer J. E. Willoughby, to Med. Training Depot, Halton, 18.4.32, on appointment to a non-permanent Commn.

NAVAL APPOINTMENTS

The following appointments have been made by the Admiralty:—

LIEUT.-COMM. (Flight Lieutenant R.A.F.).—F. W. H. CLARKE, to *Victory*, for course (May 2).

LIEUT. (Flight Lieutenant, R.A.F.).—E. B. CARNDUFF, to *Victory*, for course (May 2).

LIEUTS. (F/O., R.A.F.).—P. L. JAMISON and A. J. TILLARD, to *Victory*, for R.A.F. Base, Gosport; and J. H. T. BOTELER, to *Furious*, and for 401 Flight.

R.A.F. Annual Camps and Affiliations, 1932

DETAILS are given below of:—(1) Annual Camps in 1932 of Auxiliary Air Force and Cadre Squadrons, (2) affiliations of Royal Air Force Fighter to Royal Air Force Bomber Squadrons, (3) affiliations of Royal Air Force Fighter to Royal Air Force Flying Boat Squadrons, and (4) affiliations of Royal Air Force Fighter Squadrons to Auxiliary Air Force and Cadre Squadrons.

The Auxiliary Air Force and Cadre squadrons carry out normal service training such as air pilotage, formation flying, aerial photography, etc., while attending their annual camp.

The affiliation between Fighter and Bomber squadrons consists of the practice of offensive and defensive tactics. This applies to both the Service and the Auxiliary and Cadre squadrons.

(1) ANNUAL CAMPS OF AUXILIARY AIR FORCE AND CADRE SQUADRONS, 1932

Squadron	Camp	Date
No. 500 (County of Kent) .. (Bomber)	R.A.F. Station, Manston	April 16-29, 1932.
No. 501 (City of Bristol) .. (Bomber)	R.A.F. Station, Manston	July 24-August 6, 1932.
No. 502 (Ulster) (Bomber)	R.A.F. Station, Manston	July 11-24, 1932.
No. 503 (County of Lincoln) (Bomber)	R.A.F. Station, Tangmere	July 17-30, 1932.
No. 504 (County of Nottingham) (Bomber)	R.A.F. Station, Hawkinge	July 31-August 13, 1932.
No. 600 (City of London) .. (Bomber)	R.A.F. Station, Tangmere	July 31-August 18, 1932.
No. 601 (County of London) (Bomber)	R.A.F. Station, Lympne	July 31-August 14, 1932.
No. 602 (City of Glasgow) (Bomber)	R.A.F. Station, Hawkinge	July 15-29, 1932.
No. 603 (City of Edinburgh) (Bomber)	R.A.F. Station, Manston	July 11-25, 1932.
No. 604 (County of Middlesex) (Bomber)	R.A.F. Station, Tangmere	July 31-August 14, 1932.
No. 605 (County of Warwick) (Bomber)	R.A.F. Station, Manston	July 31-August 14, 1932.
No. 608 (North Riding) .. (Bomber)	R.A.F. Station, Manston	June 1-15, 1932.

(2) AFFILIATIONS OF R.A.F. FIGHTER TO R.A.F. BOMBER SQUADRONS

Squadron	Affiliated to	Date
No. 19 (F) ..	No. 35 (B) Squadron at Duxford	May 2-15, 1932.
No. 23 (F) ..	No. 18 (B) Squadron at Upper Heyford	July 4-17, 1932.
No. 3 (F) ..	No. 57 (B) Squadron at Netheravon	May 30-June 12, 1932.
No. 17 (F) ..	No. 101 (B) Squadron at Andover	May 30-June 12, 1932.
No. 41 (F) ..	No. 207 (B) Squadron at Bircham Newton	May 2-15, 1932.
No. 25 (F) ..	No. 33 (B) Squadron at Bicester ..	May 9-22, 1932.
No. 1 (F) ..	No. 57 (B) Squadron at Netheravon	July 4-17, 1932.
No. 43 (F) ..	No. 33 (B) Squadron at Bicester ..	July 4-17, 1932.

(3) AFFILIATIONS OF R.A.F. FIGHTER TO R.A.F. FLYING BOAT SQUADRONS

Squadron	Affiliated to	Date
No. 29 (F) ..	No. 201 (F.B) Squadron at Calshot	September 5-18, 1932.
No. 56 (F) ..	No. 204 (F.B) Squadron at Mount Batten	May 9-22, 1932.

(4) AFFILIATION OF R.A.F. FIGHTER SQUADRONS TO AUXILIARY AIR FORCE AND CADRE SQUADRONS

Squadron	Affiliated to	Date
No. 82 (F) ..	No. 501 (City of Bristol) (Bomber) Squadron at Filton	May 23-June 5, 1932.
No. 32 (F) ..	No. 504 (County of Nottingham) (Bomber) Squadron at Hucknall	May 2-15, 1932.
No. 54 (F) ..	No. 600 (City of London) (Bomber) Squadron at Hendon	April 2-10, 1932.
No. 43 (F) ..	No. 601 (County of London) (Bomber) Squadron at Hendon	April 16-24, 1932.
No. 19 (F) ..	No. 602 (City of Glasgow) (Bomber) Squadron at Renfrew	June 18-30, 1932.
No. 25 (F) ..	No. 603 (City of Edinburgh) (Bomber) Squadron at Turnhouse	June 4-16, 1932.
No. 29 (F) ..	No. 604 (County of Middlesex) (Bomber) Squadron at Hendon	April 30-May 8, 1932.
No. 111 (F) ..	No. 605 (County of Warwick) (Bomber) Squadron at Castle Bromwich	April 16-24, 1932.
No. 19 (F) ..	No. 608 (North Riding) (Bomber) Squadron at Thornaby	April 9-17, 1932.

Models

SOCIETY OF MODEL AERONAUTICAL ENGINEERS. (S.M.A.E.)

A COLD and gusty wind made things very uncomfortable for competitors in the Pilcher Cup Competition which was held at Wimbledon on Saturday, April 23. The start of the competition was delayed until the evening in the hope that conditions would improve, but at 6 o'clock, with the wind, if anything, stronger, Mr. L. A. Ward made the first flight of the competition. Just prior to this Mr. A. M. Willis hand-launched a very small fuselage model on its first real "flip," which was timed to 3 min. out of sight, the model disappearing in the direction of Wimbledon. Mr. G. F. C. Saunders won the Cup with a duration of 75.2 sec. with Mr. J. E. Pelly-Fry second 70.8 sec. and Mr. T. H. Ives third 55.2 sec. Mr. Saunders has thus carried off the first two cups in this year's competitions. The full list of results is as follows:—

PILCHER CUP—DURATION FUSELAGE R.O.G.

Competitor.	Club.	Type.	Flights.			Result.
G. F. C. Saunders	T.M.A.C.	H.W.	75.2	18.4	30.0	1
J. E. Pelly-Fry	S.M.A.E.	L.W.	64.2	7.8	66.8	2
T. H. Ives	S.M.A.E.	H.W.	7.0	55.2	25.4	3
A. T. Willis	T.M.A.C.	H.W.	46.0	6.8	33.7	4
A. M. Willis	S.M.A.E.	H.W.	35.6	45.8	6.0	5
L. A. Woods	S.M.A.E.	H.W.	29.8	9.0	8.1	6
C. Pearce	T.M.A.C.	H.W.	6.4	7.8	7.3	7

Wakefield International Cup Trials.

1. The trials will be held on May 21 at Wimbledon Common, and in the case of bad weather will be postponed until next day (Sunday, May 22).

2. Members of the S.M.A.E. and affiliated clubs wishing to enter trials and who cannot attend personally, should send their models to the Hon. Sec., S. G. Mullins, 72, Westminster Avenue, Thornton Heath, Surrey, carriage paid. These models will be flown by proxy. Members of the T.M.A.C. squadrons are asked to send their models to their London headquarters.

3. Competitors chosen from the trials for the team must satisfy the judges of the capabilities of any model they may wish to substitute for that flown by them in the trials.

4. The S.M.A.E. members, or members of affiliated clubs, who fly models sent to be flown by proxy, will not hold themselves responsible for any damage done by or to a model either in the trials or during transport.

5. Each model will be allowed six flights and the team will be chosen by the Council of the S.M.A.E. judged on duration and general performance. Any entrant whose model puts up a duration of less than 3 min. will only be included in the team at the discretion of the Council of the S.M.A.E.

6. The models chosen for the team will be sent to America by the S.M.A.E., but the cost will be borne by the clubs of which the owners of the models are members. S. G. Mullins, Hon. Sec., S.M.A.E., 72, Westminster Avenue, Thornton Heath, Surrey.

THE MODEL AIRCRAFT CLUB. (T.M.A.C.)

THE competition for the T.M.A.C. Challenge Cup will be held on Hackney Marshes on Saturday, May 14, at 3.30 p.m. The rules for this competition are as follow:—

Open to teams representing wings of T.M.A.C.

Each team to consist of three fuselage models of the same design flown by members of a wing nominated by the Wing Commander.

Each member of a team will be allowed three flights and the aggregate duration in seconds of the best three flights of each team to count as points scored.

Additional points to be awarded to each team for R.O.G., stability and landing.

The Cup to be awarded to the team scoring the highest number of points. Competition Sec., T. Newell, 32, Veroan Avenue, Bexleyheath, Kent.

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Soaring Flight

MR. CHARLES A. RIPPON, of Crouch End, sends us the following interesting letter:—

"At Parliament Hill, N.W., on Sunday, March 20, 1932, in the presence of hundreds of onlookers, a model

aeroplane (enclosed type, of about 30 in. span.), constructed and flown by a young enthusiast of about one year's experience, was carrying out some good flights. The weather was warm, hazy, and a light breeze high up, blowing down the hill in a south-easterly direction. On the model being launched on what proved to be the last time for its owner, it climbed to a great height, and after the rubber motor had run down, continued to circle in a gently undulating glide due to the initial bias on the vertical fin. This in itself was not unusual, neither was the loss of the model for that matter; what was unusual was the tremendous height it attained and the fact that it literally disappeared into the clouds. In my 24 years of model flying I have never seen anything like it, and you can imagine the mixed feelings of exultation and loss of our young friend. At least he has made model history!

"In conclusion I should like to place on record the growing interest of the general public as shown at these meetings, both in models and in full-sized craft and topics. Many is the discussion and argument I have overheard about the problems of flying and aircraft, and candid opinions of the people who control our air destiny."

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PUBLICATIONS RECEIVED

Verslagen en Verhandelingen van den Rijks-Studiedienst voor de Luchtvaart, Amsterdam. 1931. Algemeene Landsdrukkerij, 's-Gravenhage, Holland.
Aluminium Foundry Data. The British Aluminium Co., Ltd., Adelaide House, King William Street, London, E.C.4.

Illustrierte Technische Wörterbücher. Vol. XVII. Aeronautics. Compiled by A. Schlomann. VDI-Verlag, Berlin, N.W. 7. Price M. 30.

Capo Town to Clyde. By Richard Humble. London: Longmans, Green and Co., Ltd. Price 5s. net.

Nickel: Heat-Resisting Alloys. The Bureau of Information on Nickel, The Mond Nickel Co., Ltd., Imperial Chemical House, Millbank, London, S.W.1.

Photogrammetry: Collected Lectures and Essays. Edited by O. von Gruber. Translated from the German original by G. T. McCaw, M.A., and F. A. Cazalet. London: Chapman and Hall, Ltd. Price 30s. net.

Aeronautical Research Committee Reports and Memoranda: No. 1413. Wind Tunnel Experiments on the Cooling of Air Cooled Engines. By W. G. A. Perring. April, 1930. Price 2s. 6d. net. No. 1438. *Wind Tunnel Experiments on High Tip Airscrews.* By A. S. Hartshorn and G. P. Douglas. July, 1931. Price 9d. net. London: H.M. Stationery Office, Kingsway, W.C.2.

Aeronautical Research Committee Reports and Memoranda: No. 1418. Addition of Rolling Moments due to Roll and Sideslip. By H. B. Irving. June, 1931. Price 4d. net. London: H.M. Stationery Office, W.C.2.

Aviation and the Aerodrome. By H. Angley Lewis-Dale, M.B.E. London: Charles Griffin & Co., Ltd. Price 15s. net.

A General Text on Aeronautics. By Hilton F. Lusk, B.S., M.S. New York: The Ronald Press Co. Price \$3.25.

Korrosion. Report on the First Corrosion Conference, October 20, 1931, in Berlin. V.D.I.-Verlag G.m.b.H., Berlin, N.W.7. Price M. 7.50.

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AERONAUTICAL PATENT SPECIFICATIONS

(Abbreviations: Cyl. = cylinder; i.c. = internal combustion; m. = motors. The numbers in brackets are those under which the Specification will be printed and abridged, etc.)

APPLIED FOR IN 1930

Published May 5, 1932

36,913. L. W. WINTER. Landing and beaching gears for land and water aircraft. (370,441.)

APPLIED FOR IN 1931

Published May 5, 1932

1,261. G. P. HERRICK. Aeroplanes. (370,504.)
4,126. SCINTILLA AKT.-GES. Ignition switching-apparatus for use in aircraft. (370,559.)
4,242. AERO PICKUP SERVICE CORPN. Apparatus for transferring loads to aircraft in flight. (370,563.)
5,278. W. H. LANE. Model aeroplane. (370,576.)
6,904. C. A. N. WAUTON. Device for anchoring aircraft. (370,594.)
7,863. SUPERMARINE AVIATION WORKS (VICKERS), LTD., and R. J. MITCHELL. Construction of aircraft. (370,610.)
15,513. G. CASTAGNERIS. Flying machines. (370,715.)

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